Escola Universitària d'Enginyeria
Tècnica Industrial de Barcelona
Consorci Escola Industrial de Barcelona
UNIVERSITAT POLITÈCNICA DE CATALUNYA

Annexos

"DISSENY I VALIDACIÓ D'UNA MTB AMB SISTEMA D'AMORTIMENT ALTERNATIU"

TFG presentat per optar al títol de GRAU en
ENGINYERIA MECÀNICA
per **Marc Peralta i Queral**

Barcelona, 09 de Juny de 2015

Director: Jordi Torner i Ribé
Departament d'Expressió Gràfica a l'Enginyeria (EGE)
Universitat Politècnica de Catalunya (UPC)

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ANNEX 1:

DIAGRAMA GANTT

GANTT - Disseny i validació d'una MTB amb sistema d'amortiment alternatiu

Última actualització: 27/05/2014

#	TASCA	RESPONSABLE	NOVEM.		DESEMBRE					GENER				FEBRER				MARÇ				ABRIL				MAIG				%	CONTACTE
			S 01	S 02	S 03	S 04	S 05	S 06	S 07	S 08	S 09	S 10	S 11	S 12	S 13	S 14	S 15	S 16	S 17	S 18	S 19	S 20	S 21	S 22	S 23	S 24	S 25	S 26	S 27		
			18-nov.	25-nov.	2-dic.	9-dic.	16-dic.	23-dic.	30-dic.	6-ene.	13-ene.	20-ene.	27-ene.	3-feb.	10-feb.	17-feb.	24-feb.	3-mar.	10-mar.	17-mar.	24-mar.	7-abr.	14-abr.	21-abr.	28-abr.	5-may.	12-may.	19-may.	26-may.		
1	DOCUMENTACIÓ I ORGANITZACIÓ D'INFORMACIÓ DE PARTIDA	MARC																												100%	
2	REDACCIÓ MEMÒRIA (PART TEÒRICA)	MARC																												100%	
3	CONTRAST D'INFORMACIÓ AMB TERCERS	MARC / ALTRES																												100%	Adán Balagué (MONTBIKE), Òscar Romero (OR BIKES), Ricard Antó (FÀBREGUES), Òscar Panisello (CONTROLPACK), Esteve Mestre (TEAM IBEROLE!), Agustí Descarrega (CE. MONTASPRE), Joan Albesa (UCSB)
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5	PRIMERS ESBOSSOS I CROQUIS	MARC																												100%	
6	SELECCIÓ DE COMPONENTS	MARC																												100%	
7	MODELAT 3D DEL QUADRE I BASCULANT	MARC																												100%	
8	CÀLCUL DE CÀRREGUES PER ANALITZAR EL DISSENY	MARC																												100%	
9	ESTUDIS DE RESISTÈNCIA	MARC																												100%	
10	MODIFICACIONS NECESSÀRIES	MARC																												100%	
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14	SOL·LICITUD OFERTA CONSTRUCCIÓ QUADRE	BARRAQUET-GIL-VIDAL SL																												100%	Vicente Barraquet
15	SOL·LICITUD OFERTA CONSTRUCCIÓ PECES	TECNOINSTAL·LACIONS SL																												100%	Albert Rofín
16	REDACCIÓ MEMÒRIA (PART PRÀCTICA)	MARC																												100%	
17	MODELAT 3D COMPONENTS	MARC																												100%	
18	ACOBLAMENT QUADRE+BASCULANT+COMPONENTS	MARC																												100%	
19	EDICIÓ FINAL I REVISIÓ MEMÒRIA + ANNEXOS+ PLANOLS	MARC																												100%	

TASCA FINALITZADA DINTRE DEL TERMINI ESTABLERT

TASCA FINALITZADA FORA DEL TERMINI ESTABLERT

ANNEX 2: CÀLCULS

En aquest annex s'exposen els diferents càlculs realitzats durant el desenvolupament del projecte.

2.1. Càlcul de capacitats del canvi

En aquest apartat es mostra el procediment de càlcul seguit per obtenir les capacitats dels desviadors davanter i posterior del canvi de la bicicleta. Aquests valors són indispensables per elegir de forma correcta el model i variant de desviador a muntar.

2.1.1. Càlcul de capacitat del desviador davanter

Aquesta capacitat equival a la diferència de dents entre el plat major i el plat menor del joc de plats del pedalier. Per al conjunt de plats elegits, els Shimano SLX Hollowtech II, el plat interior disposa de 24 dents i l'exterior de 42 dents, de manera que:

$$C_{Desv.davanter} \geq Z_{Plat.major} - Z_{Plat.menor} \quad (1)$$

$$C_{Desv.davanter} \geq 42 - 24 = 18$$

2.1.2. Càlcul de capacitats del desviador posterior

En el cas del desviador posterior existeixen dues capacitats diferents. En primer lloc la capacitat frontal, que és equivalent a la capacitat total del desviador davanter, és a dir, la diferència de dents entre el plat major i el plat menor. En segon lloc, es calcula també la capacitat total mínima que ha de tenir el desviador posterior, que consisteix en la suma de la capacitat frontal més la diferència entre el número de dents de la corona del cassette més gran i la corona del cassette més petita.

$$C_{Frontal desv.posterior} \geq Z_{Plat.major} - Z_{Plat.menor} \quad (2)$$

$$C_{Frontal.desv.posterior} \geq 42 - 24 = 18$$

$$C_{Total.desv.posterior} \geq C_{Frontal.desv.posterior} + \left(Z_{Coronamajor} - Z_{Corronamenor}\right) \quad (3)$$

$$C_{Total.desv.posterior} \geq 18 + \left(32 - 11\right) = 39$$

D'acord amb els resultats obtinguts, caldrà muntar a la bicicleta un desviador amb una capacitat igual o major que 18, i un desviador posterior amb una capacitat frontal igual o major que 18 i una capacitat total igual o major que 39.

2.2. Càlcul de paràmetres de rosca

A continuació es mostren els càlculs seguits per obtenir els paràmetres de la rosca de la caixa del pedalier:

$$Pas(mm) = 25{,}4 / n^{o} TPI \quad (4)$$

$$Pas(mm) = 25{,}4 / 24 = 1{,}058$$

$$t(mm) = 0{,}0960491 \cdot Pas \quad (5)$$

$$t(mm) = 0{,}960491 \cdot 1{,}058 = 1{,}016$$

$$t/6(mm) = 1{,}016 / 6 = 0{,}17$$

2.3. Càlcul de càrregues

En aquest apartat s'exposa el mètode seguit pel càlcul de les càrregues a aplicar en la realització dels diferents anàlisi i estudis que es duen a terme per la validació de la bicicleta.

2.3.1. Càlcul de càrregues per a hipòtesi 1

La primera hipòtesi consisteix en que el ciclista aplica el seu pes de manera suau i progressiva sobre el seient, arribant a assolir la posició de pedaleig correcta i mantenint-la al llarg del temps. En aquest cas, la única sol·licitació externa del basculant ve donada pel propi pes del ciclista:

$$F = m \cdot g \quad (6)$$

$$F = 120 \cdot 9{,}81 \approx 1.180 N$$

A continuació es mostra el diagrama de cos lliure format pel basculant i la tija del seient, que actuen com una sola barra rígida. El ciclista aplica la seva càrrega sobre el seient, és a dir, sobre l'extrem lliure de la tija (punt

P). El basculant està subjecte al quadre pel seu punt central (A) i a l'amortidor (que està blocat) per l'extrem (B).

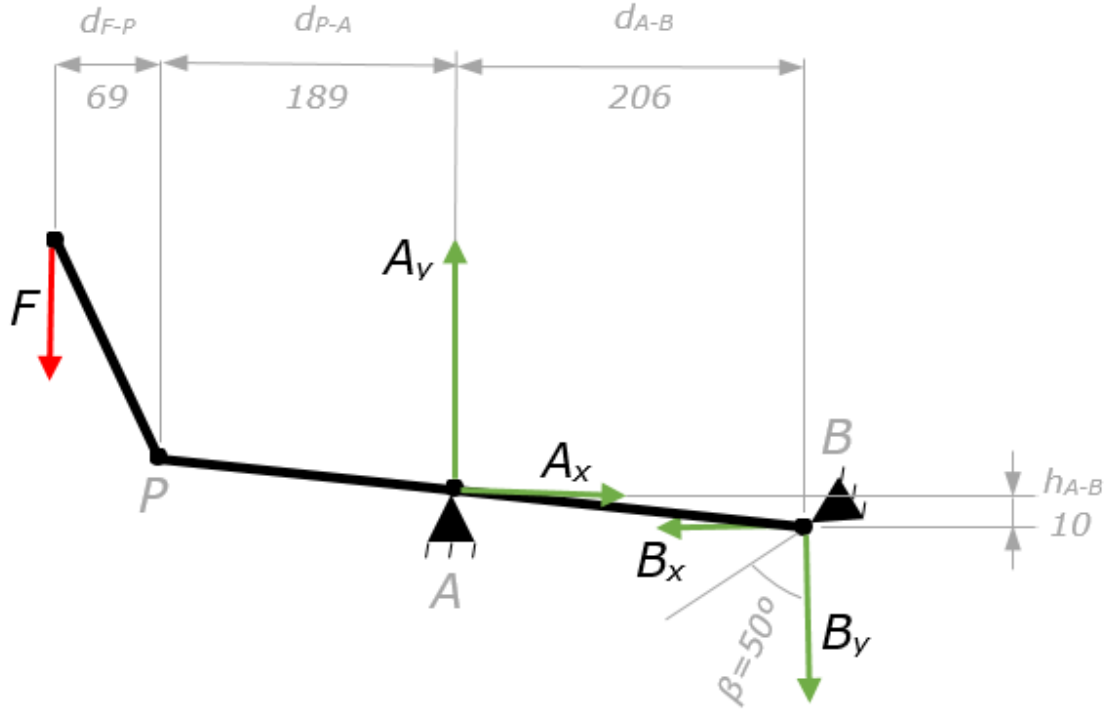

Figura 1. *Diagrama de cos lliure del conjunt basculant-tija. Mesures donades en mil·límetres.*

Cal tenir en compte que A i B estan formats per dos punts de subjecció, per la qual cosa caldrà dividir entre dos els resultats obtinguts.

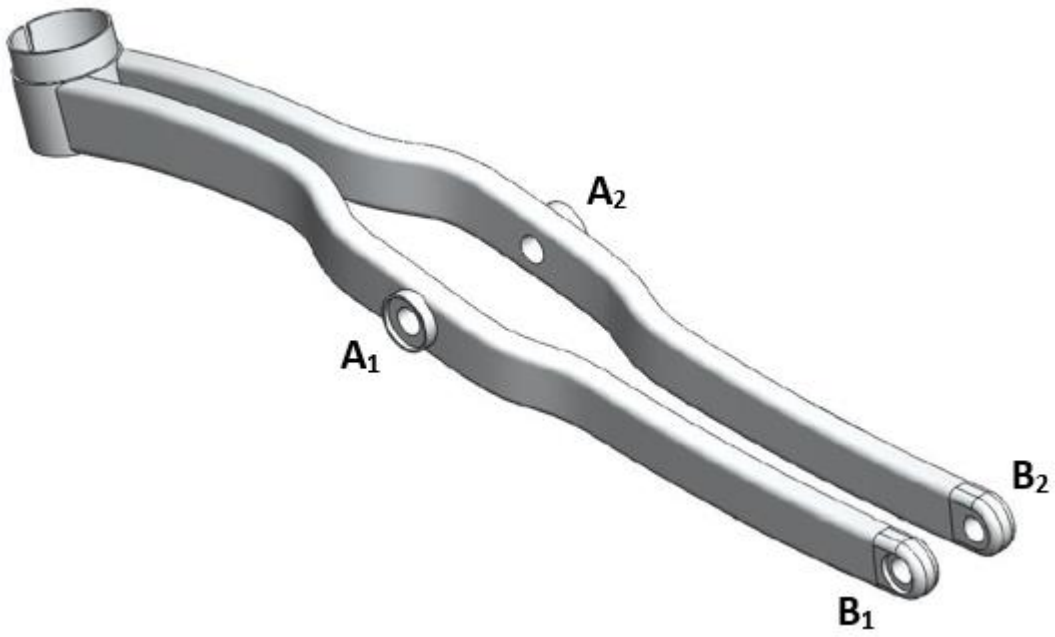

Figura 2. *Vista real dels punts de suport.*

Perquè en el diagrama donat es doni la condició de repòs, en qualsevol punt el sumatori de moments ha de ser nul:

$$\sum M_A = 0 \tag{7}$$

$$1.180 \cdot (d_{P-Q} + d_{Q-A}) - B_y \cdot d_{A-B} - B_x \cdot h_{A-B} = 0$$

$$1.180 \cdot (69 + 189) - B_y \cdot 206 - B_x \cdot 10 = 0$$

$$B_x = B \cdot \sin\alpha \tag{9}$$

$$B_y = B \cdot \cos\alpha \tag{10}$$

Introduint les equacions 9 i 10, a l'equació 7:

$$1.180 \cdot 258 = B\cos\alpha \cdot 206 + B\sin\alpha \cdot 10$$

$$1.180 \cdot 258 = B \cdot (\cos 50^o \cdot 206 + \sin 50^o \cdot 10)$$

$$B = \frac{1.180 \cdot 258}{\cos 50^o \cdot 206 + \sin 50^o \cdot 10} = 2.174N$$

$$B_x = 2.174 \cdot \sin 50^o = 1.665N$$

$$B_{x-1} = B_{x-2} = B_x / 2 \tag{11}$$

$$B_{x-1} = B_{x-2} = 1.665 / 2 \approx 833N$$

$$B_y = 2.174 \cdot \cos 50^o = 1.398N$$

$$B_{y-1} = B_{y-2} = B_y / 2 \tag{12}$$

$$B_{y-1} = B_{y-2} = 1.398 / 2 = 699N$$

De la mateixa manera, per a que el problema sigui estàtic, el sumatori de forces verticals i el sumatori de forces horitzontals, han de ser també ambdós nuls:

$$A_y - B_y - F = 0 \tag{13}$$

$$A_y = 1.398 + 1.180 = 2.578N$$

$$A_{y-1} = A_{y-2} = A_y / 2 \tag{14}$$

$$A_{y-1} = A_{y-2} = 2.578/2 = 1.289N$$

$$A_x - B_x = 0 \tag{15}$$

$$A_x = B_x = 1.665N$$

$$A_{x-1} = A_{x-2} = A_x/2 \tag{16}$$

$$A_{x-1} = A_{x-2} = 1.665/2 \approx 833N$$

Per motius d'estalviar temps i complexitat al realitzar els estudis pertinents, es creu convenient prescindir de la tija del seient i realitzar la simulació exclusivament sobre el basculant. Per aquest motiu cal desplaçar la força F fins el punt Q i aplicar sobre aquest el parell que la força feia inicialment sobre ell:

$$M_P = F \cdot d_{F-P} \tag{17}$$

$$M_P = 1.180 \cdot 69 \approx 82.000N{\cdot}mm = 82N{\cdot}m$$

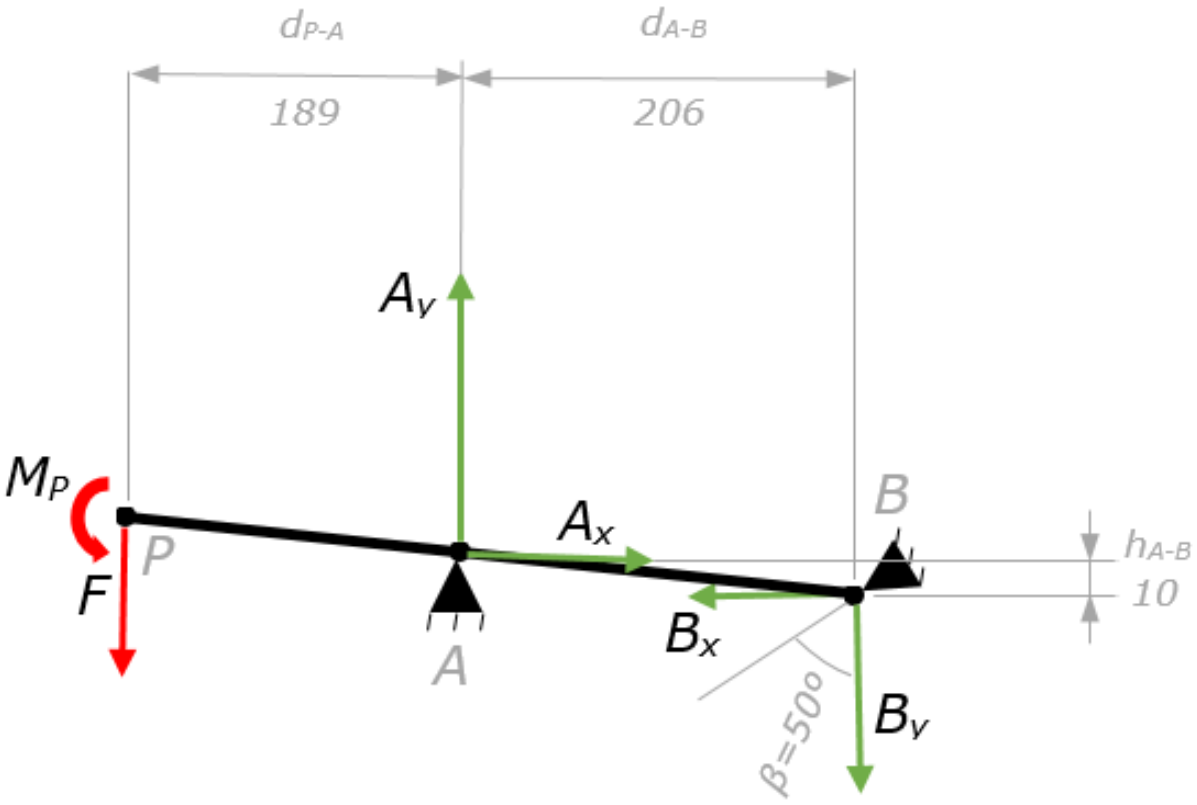

Figura 3. *Diagrama de cos lliure del basculant un cop realitzat el trasllat de la força. Mesures donades en mil·límetres.*

A continuació es demostra que el sistema és equivalent i per tant, els resultats de les reaccions no varien:

$$\sum M_A = 0$$

$$M_P + 1.180 \cdot d_{Q-A} - B_y \cdot d_{A-B} - B_x \cdot h_{A-B} = 0$$

$$82.000 + 1.180 \cdot 189 - B_y \cdot 206 - B_x \cdot 10 = 0$$

$$B_x = B \cdot \sin \alpha$$

$$B_y = B \cdot \cos \alpha$$

$$82.000 + 1.180 \cdot 189 = B \cos \alpha \cdot 206 + B \sin \alpha \cdot 10$$

$$82.000 + 1.180 \cdot 189 = B \cdot (\cos 50^o \cdot 206 + \sin 50^o \cdot 10)$$

$$B = \frac{82.000 + 1.180 \cdot 189}{\cos 50^o \cdot 206 + \sin 50^o \cdot 10} \approx 2.174N$$

$$B_x = 2.174 \cdot \sin 50^o = 1.665N$$

$$B_{x-1} = B_{x-2} = B_x / 2$$

$$B_{x-1} = B_{x-2} = 1.665 / 2 \approx 833N$$

$$B_y = 2.174 \cdot \cos 50^o = 1.398N$$

$$B_{y-1} = B_{y-2} = B_y / 2$$

$$B_{y-1} = B_{y-2} = 1.398 / 2 = 699N$$

$$A_y - B_y - F = 0$$

$$A_y = 1.398 + 1.180 = 2.578N$$

$$A_{y-1} = A_{y-2} = A_y / 2$$

$$A_{y-1} = A_{y-2} = 2.578 / 2 = 1.289N$$

$$A_x - B_x = 0$$

$$A_x = B_x = 1.665N$$

$$A_{x-1} = A_{x-2} = A_x / 2$$

$$A_{x-1} = A_{x-2} = 1.665/2 \approx 833N$$

2.3.2. Càlcul de càrregues per a hipòtesi 2

La segona hipòtesi suposa que el ciclista deixa caure el seu pes des d'una altura de 5 centímetres respecte el seient, impactant sobre aquest. Considerem tres instants: t_0 (instant en el que el cos inicia la caiguda), t_1 (instant inicial de l'impacte) i t_2 (instant final de l'impacte en que el cos arriba al repòs). L'energia potencial respecte la superfície d'impacte és:

$$Ep_0 = mgh \tag{18}$$

$$Ep_0 = 120 \cdot 9{,}81 \cdot 0{,}05 = 58{,}9J$$

Pel principi de conservació d'energia mecànica, es pot afirmar que l'energia cinètica del ciclista en el precís instant de l'impacte serà igual a l'energia potencial inicial, ja que en l'instant t=0 l'energia cinètica és nul·la i en l'instant t=1, ho és la potencial:

$$Em_1 = Em_0 \tag{19}$$

$$Ec_1 = Ep_0 = 58{,}9J$$

Després de l'impacte inicial, la superfície tova del seient i la musculatura del ciclista cedeixen, penetrant-se mútuament de forma lleu. D'aquesta manera, la força d'impacte efectua un treball durant una certa distància d'assentament, que es considera per al present cas de 3 centímetres, dissipant l'energia que el cos del ciclista tenia abans de l'impacte fins forçar-lo al repòs. D'aquesta manera:

$$W_{1-2} = F \cdot d_{1-2} \tag{20}$$

$$F = \frac{W_{1-2}}{d_{1-2}} = \frac{58{,}9}{0{,}03} = 1.960N$$

Es repeteixen els càlculs seguits per la hipòtesi 1, però amb aquest nou valor de la força:

$$M_P = F \cdot d_{F-P}$$

$$M_P = 1.960 \cdot 69 \approx 135.000N \cdot mm = 135N \cdot m$$

$$\sum M_A = 0$$

$$M_P + 1.960 \cdot d_{Q-A} - B_y \cdot d_{A-B} - B_x \cdot h_{A-B} = 0$$

$$82.000 + 1.960 \cdot 189 - B_y \cdot 206 - B_x \cdot 10 = 0$$

$$B_x = B \cdot \sin\alpha$$

$$B_y = B \cdot \cos\alpha$$

$$82.000 + 1.960 \cdot 189 = B\cos\alpha \cdot 206 + B\sin\alpha \cdot 10$$

$$82.000 + 1.960 \cdot 189 = B \cdot (\cos 50^o \cdot 206 + \sin 50^o \cdot 10)$$

$$B = \frac{135.000 + 1.960 \cdot 189}{\cos 50^o \cdot 206 + \sin 50^o \cdot 10} \approx 3.610N$$

$$B_x = 3.610 \cdot \sin 50^o = 2.765N$$

$$B_{x-1} = B_{x-2} = B_x / 2$$

$$B_{x-1} = B_{x-2} = 1.665 / 2 \approx 1.383N$$

$$B_y = 3.610 \cdot \cos 50^o = 2.320N$$

$$B_{y-1} = B_{y-2} = B_y / 2$$

$$B_{y-1} = B_{y-2} = 1.398 / 2 = 1.160N$$

$$A_y - B_y - F = 0$$

$$A_y = 2.320 + 1.960 = 4.280N$$

$$A_{y-1} = A_{y-2} = A_y / 2$$

$$A_{y-1} = A_{y-2} = 4.280 / 2 = 2.140N$$

$$A_x - B_x = 0$$

$$A_x = B_x = 2.765N$$

$$A_{x-1} = A_{x-2} = A_x / 2$$

$$A_{x-1} = A_{x-2} = 1.665/2 \approx 1.383N$$

2.3.3. Càlcul de càrregues per hipòtesi 3

La tercera i última hipòtesi contempla la situació en que el ciclista efectua un salt amb la bicicleta. La tècnica utilitzada en els salts és la següent: el ciclista descarrega el seu pes del seient i es posa dret, amb els genolls lleument flexionats, recolzant tot el seu pes sobre els pedals. Després de perdre el contacte amb el terra durant un instant, les rodes de la bicicleta impacten sobre el terra, moment en el qual el ciclista flexiona encara més els genolls amb la finalitat de reduir al màxim la força d'impacte. Per al present cas s'estima una flexió mitja de 10 centímetres.

En la modalitat per la qual va destinada la bicicleta, el Trail, rarament s'efectuen salts de més de 0,5 metres, tot i així, s'estima una altura de 0,75 metres per al càlcul:

$$Ep_0 = mgh$$

$$Ep_0 = 120 \cdot 9{,}81 \cdot 0{,}75 = 883J$$

$$Em_1 = Em_0$$

$$Ec_1 = Ep_0 = 883J$$

$$W_{1-2} = F \cdot d_{1-2} \; ; F = \frac{W_{1-2}}{d_{1-2}} = \frac{883}{0{,}1} = 8.830N$$

ANNEX 3: OFERTES

PRESUPUESTO

EMPRESA	CLIENTE
Barraquet Gil Vidal SLU C/Segadors 28-30 Esparreguera 08292 España B38420995	NOMBRE Marc Peralta Queral DIRECCIÓN TELÉFONO EMAIL

Nº PRESUPUESTO 09587 FECHA 17-abr

CONCEPTO	CANTIDAD	PRECIO	%DTO.	TOTAL
TUBO SUPERIOR	1	44,8		44,80 €
TUBO DIAGONAL	1	64,8		64,80 €
VAINAS	2	13,5		27,00 €
TIRANTES	2	11,4		22,80 €
UNIÓN TUBO SUP / VAINAS	1	10,5		10,50 €
MONTAJE + SOLDADURA	1	45		45,00 €
AMORTIZACIÓN UTILLAJES	1	120		120,00 €
			SUMA	334,90 €
			%IVA 21	70,33 €
			TOTAL PRESUPUESTO	**405,23 €**

FORMA DE PAGO A DEFINIR / OFERTA SUJETA A FAB. 1000 UD.

CONFORME EL CLIENTE
FIRMA Y SELLO

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tecno instal·lacions
Aplicacions Manteniments i Serveis Industrials

Pol. Industrial d'Ansedó nau-2 43529 Roquetes (Tarragona)
Telèfon: +34 977 502 367 - Fax: +34 977 502 921
e-mail: info@tecnoinstal.info www.tecnoinstal.info

OFERTA: FABRICACIÓ PECES QUADRE

CLIENT:

Sr. Marc Peralta
Tel.
email

n/ref.:	0705140900
Data:	14/04/2014
Pàg.:	1/1

CONCEPTO	UN.	PRECIO	TOTAL
BASCULANTE	1	250,00	250,00 €
PIPA DIRECCIÓN	1	50,00	50,00 €
CAJA PEDALIER	1	20,00	20,00 €
PUNTERA IZQUIERDA FIJA	1	20,00	20,00 €
PUNTERADERECHA FIJA	1	30,00	30,00 €
PUNTERA IZQUIERDA	1	12,00	12,00 €
PUNTERA DERECHA	1	15,00	15,00 €
HEMBRA BASCULANTE	1	25,00	25,00 €
MACHO BASCULANTE	1	20,00	20,00 €
HEMBRA AMORTIGUADOR	1	25,00	25,00 €
MACHO AMORTIGUADOR	1	20,00	20,00 €
ALETA AMORTIGUADOR IZQUIERDA	1	22,00	22,00 €
ALETA AMORTIGUADOR DERECHA	1	22,00	22,00 €
SOPORTE BASCULANTE	1	18,00	18,00 €
JUEGO SOPORTES CABLEADO	1	12,00	12,00 €
SOPORTE FRENO SUPERIOR	1	11,00	11,00 €
SOPORTE FRENO INFERIOR	1	11,00	11,00 €
TORNILLERIA	1	10,00	10,00 €
MONTAJE + SOLDADURA	1	84,00	84,00 €
	TOTAL		677,00 €

Forma de pagament: A concretar
Transport: Pagat
IVA: 21% INCLÒS
Condicions d'oferta: Oferta per la fabricació de 1000 jocs de peces
Validesa d'oferta: 30 dies

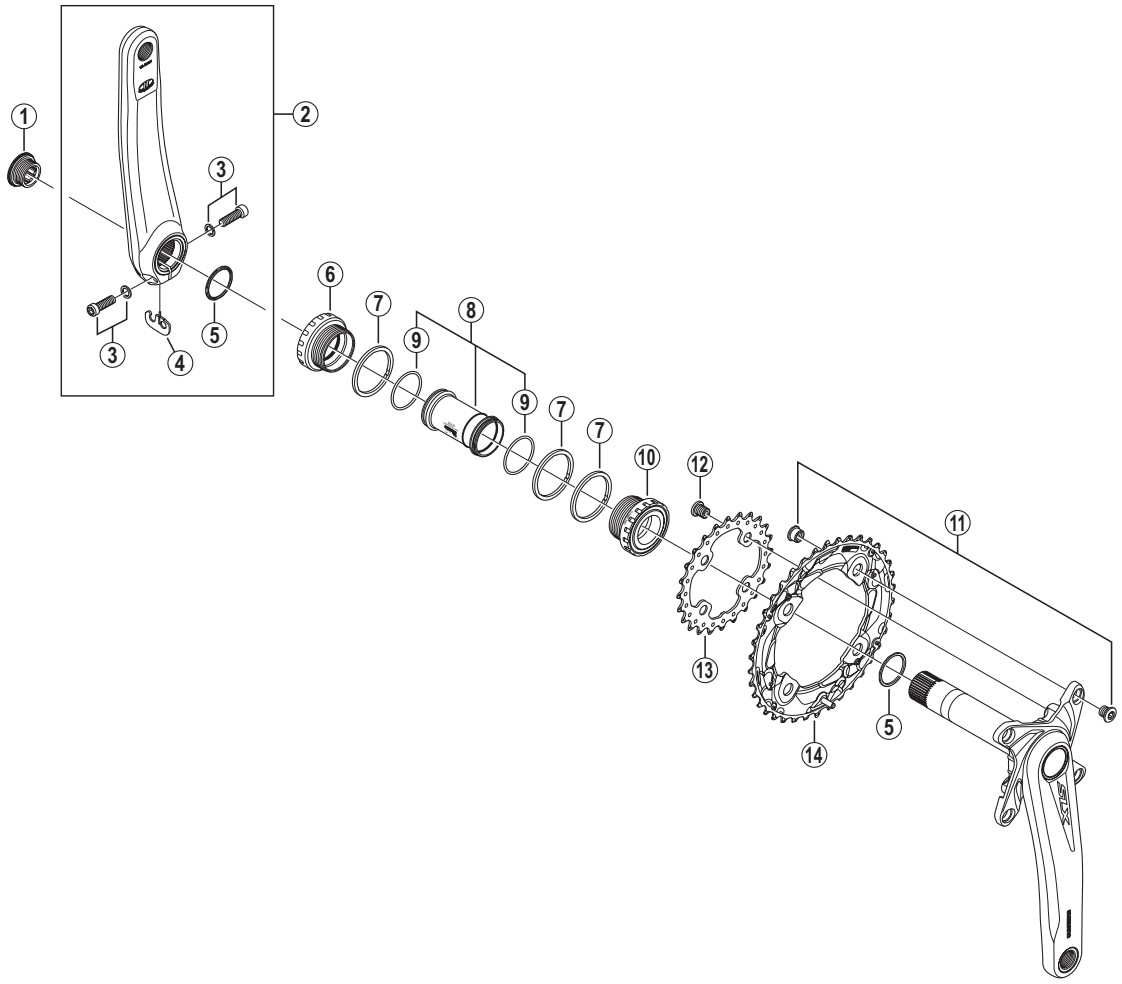
CONFORME CLIENT:

Josep Sánchez Herrero
josep@tecnoinstal.info

ANNEX 4: MANUALS DE COMPONENTS

SHIMANO SLX Front Chainwheel

FC-M675



- **Chainring teeth combinations: 38-24T(AM) / 38-26T (AK) / 40-28T (AJ)**
- **Bolt circle diameter: 104 mm...(For outer gear), 64 mm...(For inner gear)**

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGE-ABILITY FC-M785	FC-M665
1	**Y1F811100**	Crank Arm Fixing Bolt	A	A
2	**Y1N998010**	Left Hand Crank Arm 170 mm	B	B
	Y1N998020	Left Hand Crank Arm 175 mm	B	B
3	**Y1KS98030**	Clamp Bolt (M6 x 19) & Washer	A	B
4	**Y1FU98120**	Plate	A	A
5	**Y1F316000**	Ring	A	A
6	**Y1J198080**	Left Hand Adapter (B.C.1.37" x 24T) English Thread (SM-BB70)	A	A
7	**Y1F813000**	Spacer (2.5 mm)	A	A
8	**Y1E598210**	Inner Cover & O-Ring	A	A
9	**Y1TF21000**	O-Ring	A	A
10	**Y1J198090**	Right Hand Adapter (B.C.1.37" x 24T) English Thread (SM-BB70)	A	A
11	**Y1NA98010**	Outer Gear Fixing Bolt (TORX®**/M8 x 7) & Nut (4 sets)	B	
12	**Y1MM98100**	Inner Gear Fixing Bolt (TORX®**/M8 x 8.5 / 4 pcs.)	A	B
13	**Y1NA24000**	Chainring 24T-AM	B	
	Y1NA26000	Chainring 26T-AK	B	
	Y1NA28000	Chainring 28T-AJ	B	
14	**Y1NA98020**	Chainring 38T-AM	B	
	Y1NA98030	Chainring 38T-AK	B	
	Y1NA98040	Chainring 40T-AJ	B	

A: Same parts.
B: Parts are usable, but differ in materials, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Jun.-2012-3397

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SHIMANO

UM-1NJ0A-002-00

User's manual

Front Chainwheel Bottom bracket

User's manuals in other languages are available at :
http://si.shimano.com

IMPORTANT NOTICE

- Contact the place of purchase or a bicycle dealer for information on installation and adjustment of the products which are not found in the user's manual. A dealer's manual for professional and experienced bicycle mechanics is available on our website (http://si.shimano.com).
- Do not disassemble or alter this product.

For safety, be sure to read this user's manual thoroughly before use, and follow them for correct use.

Important Safety Information

Guidelines that require replacement, contact the place of purchase or a bicycle dealer.

⚠ WARNING

- **Check that there are no cracks in the crank arms before riding the bicycle. If there are any cracks, the crank arm may break and you may fall off the bicycle.**
- Be careful not to let the cuffs of your clothes get caught in the chain while riding, otherwise you may fall off the bicycle.
- After reading the user's manual carefully, keep it in a safe place for later reference.

⚠ CAUTION

- There is the danger of injury from the tips of the teeth on the chainrings.

Note

- Use a neutral detergent to clean the crank arm and the bottom bracket. Using alkaline or acidic detergents may cause discoloration.
- In addition, if pedaling performance does not feel normal, check this once more.
- Do not wash the bottom bracket with high-pressure jets of water.
- You should periodically wash the chainrings in a neutral detergent. In addition, cleaning the chain with neutral detergent and lubricating it can be an effective way of extending the useful life of the chainrings and the chain.
- The cuffs of your clothing may get dirty from the chain while riding.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

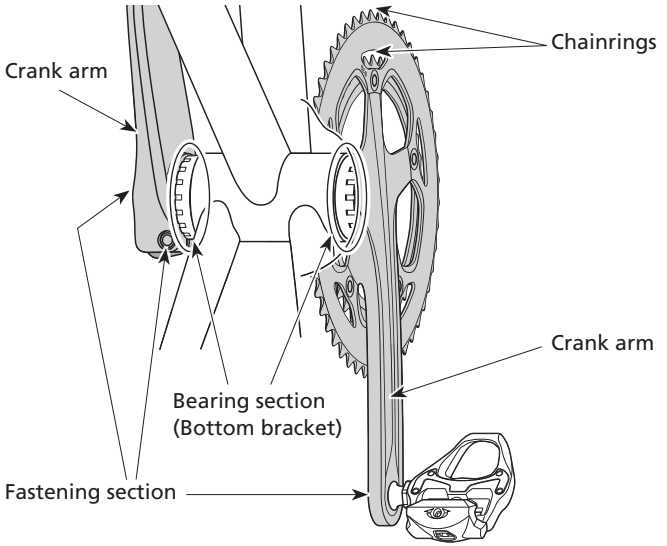
Regular inspections before riding the bicycle

Before riding the bicycle, check the following items. If any problems are found with the following items, contact the place of purchase or a bicycle dealer.

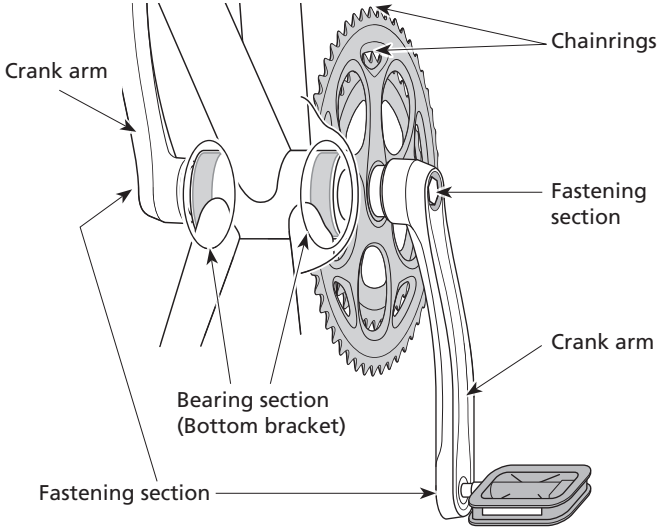
- Are there any cracks in the crank arms?
- Are the fastening sections fixed securely?
- Are the bearing sections fixed securely?
- Are there any abnormal noises?

Names of parts

In the case of unit bearings



In the case of non-unit bearings



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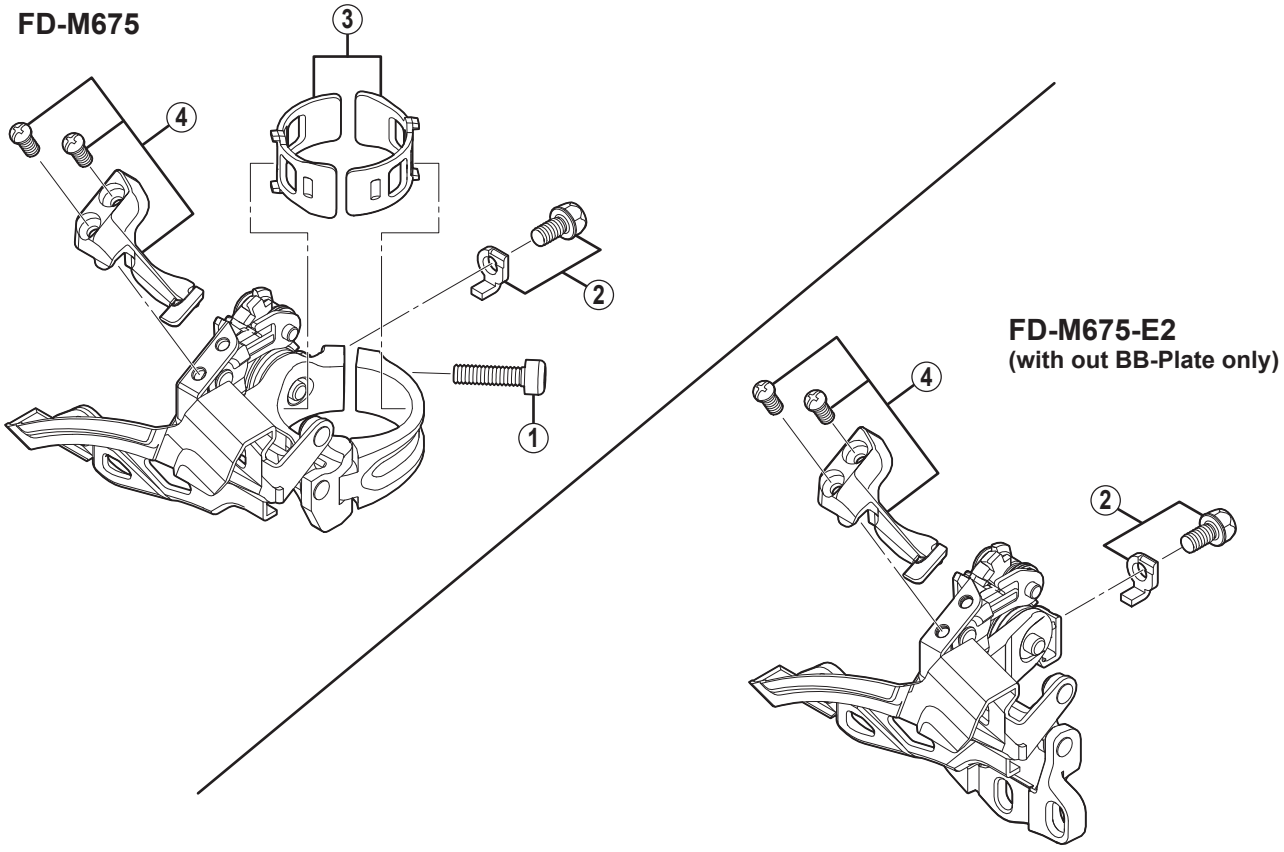
SHIMANO SLX Front Derailleur

FD-M675
FD-M675-E2 Bracket Type



FD-M785

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGEABILITY		
1	**Y5BG07800**	Clamp Bolt (M5 x 17.5)	A		
2	**Y5MC98010**	Cable Fixing Plate & Bolt (M5 x 9)	B		
3	**Y57Y98030**	SM-AD17S Clamp Band Adapters for S-size/φ28.6 mm (1-1/8")	A		
	Y57Y98040	SM-AD17M Clamp Band Adapters for M-size/φ31.8 mm (1-1/4")	A		
4	**Y5M898010**	Stroke Adjust Screws (M4 x 8.5) & Plate	A		

A: Same parts.
B: Parts are usable, but differ in materirals, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

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UM-5NL0A-003-00

User's manual

Front Derailleur

User's manuals in other languages are available at :
http://si.shimano.com

IMPORTANT NOTICE

- Contact the place of purchase or a bicycle dealer for information on installation and adjustment of the products which are not found in the user's manual. A dealer's manual for professional and experienced bicycle mechanics is available on our website (http://si.shimano.com).
- Do not disassemble or alter this product.

For safety, be sure to read this user's manual thoroughly before use, and follow it for correct use.

Important Safety Information

For replacement information, contact the place of purchase or a bicycle dealer.

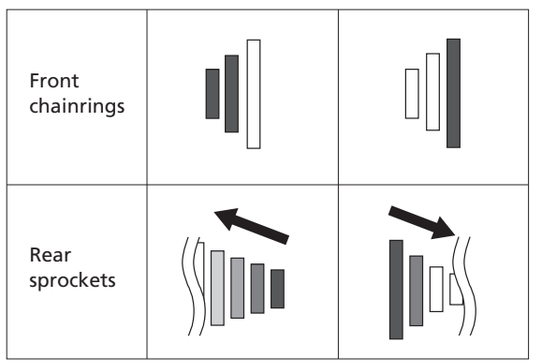
⚠ WARNING

- Be careful not to let the hemming of your clothes get caught in the chain while riding. Otherwise you may fall off the bicycle.
- After reading the user's manual carefully, keep it in a safe place for later reference.

Note

- If gear shifting operations cannot be carried out smoothly, clean the derailleur and lubricate all moving parts.
- When the chain is in the position shown in the illustration below, the chain may touch the front chainrings or front derailleur and generate noise. If the noise is a problem, shift the sprockets in the direction of the arrow illustrated below 1 to 2 gears.
  The position at which the chain makes a noise is different depending on the product; for details please consult a dealer or an agency.

<Example of chain position where noise is easily generated >



- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

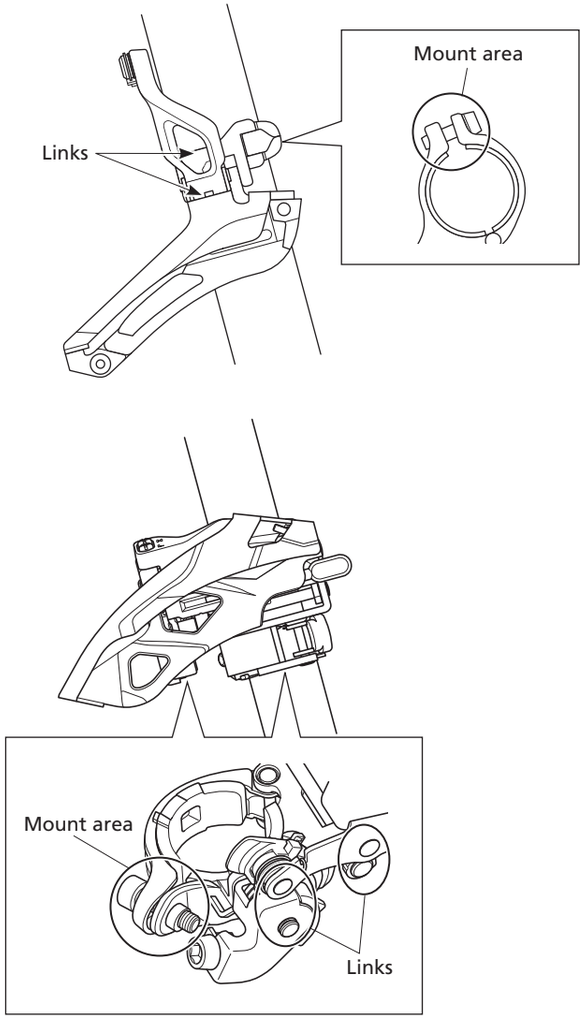
Regular inspections before riding the bicycle

Before riding the bicycle, check the following items. If any problems are found with the following items, contact the place of purchase or a bicycle dealer.

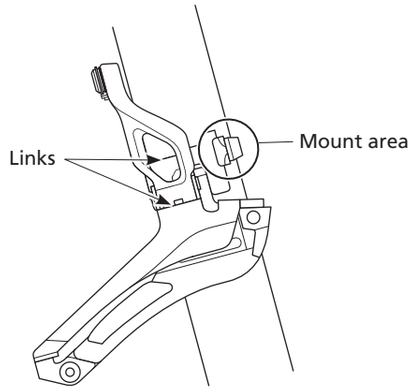
- Is gear shifting carried out smoothly?
- Is there any looseness in the mount area?
- Do the links have a large gap between them?
- Are the derailleurs making any abnormal noises?

Names of parts

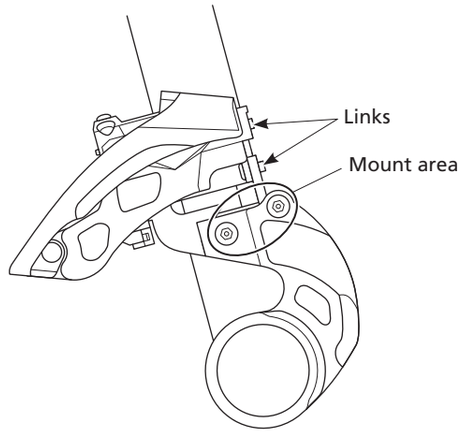
Type B



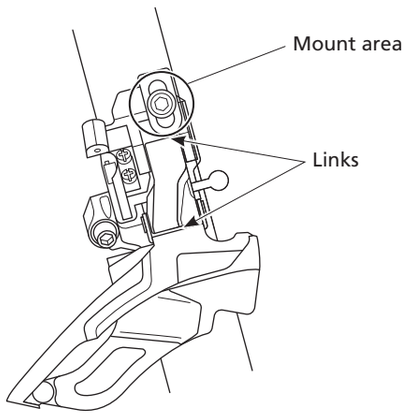
Type F



Type E



Type D



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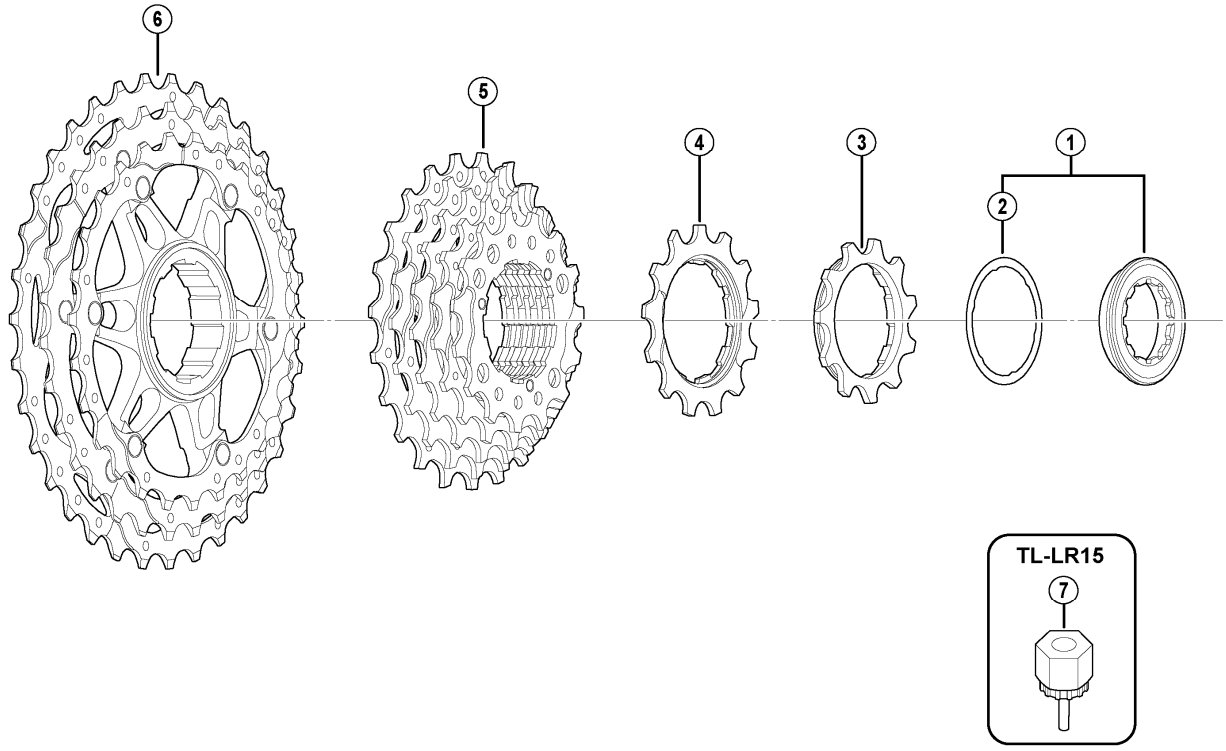
Cassette Sprocket (10-Speed)

CS-HG81-10 bj/bk/bL-Group



- **bj-group sprocket teeth combination: 11-13-15-17-19-21-23-26-30-34T**
- **bk-group sprocket teeth combination: 11-13-15-17-19-21-24-28-32-36T**
- **bL-group sprocket teeth combination: 11-12-14-16-18-20-22-25-28-32T**

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGEABILITY
1	**Y1YS98010**	Lock Ring & Spacer	
2	**Y10Z04000**	Lock Ring Spacer	
3	**Y1YS11000**	Sprocket Wheel 11T (Built in spacer type) for bj/bk-Group	
*	**Y1YS11100**	Sprocket Wheel 11T (Built in spacer type) for bL-Group	
4	**Y1YS13000**	Sprocket Wheel 13T (Built in spacer type) for bj/bk-Group	
*	**Y1YS12000**	Sprocket Wheel 12T (Built in spacer type) for bL-Group	
5	**Y1YS98030**	Sprocket Unit (15-17-19-21-23T) for bj-Group	
	Y1YS98040	Sprocket Unit (15-17-19-21-24T) for bk-Group	
*	**Y1YS98070**	Sprocket Unit (14-16-18-20-22T) for bL-Group	
6	**Y1YS98050**	Sprocket Unit (26-30-34T) for bj-Group (Cassette Sprocket Carrier for 6arm)	
	Y1YS98060	Sprocket Unit (28-32-36T) for bk-Group (Cassette Sprocket Carrier for 6arm)	
*	**Y1YS98080**	Sprocket Unit (25-28-32T) for bL-Group (Cassette Sprocket Carrier for 5arm)	
7	**Y12009230**	Lock Ring Removal Tool (TL-LR15)	

A: Same parts.
B: Parts are usable, but differ in materials, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Apr.-2011-3018A
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SI-6T9RA-002-00

General Safety Information

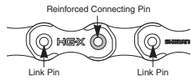
⚠ WARNING

"Maintenance interval depends on the usage and riding circumstances. Clean regularly the chain with an appropriate chaincleaner. Never use alkali based or acid based solvents such as rust cleaners. If those solvent be used chain might break and cause serious injury."

- **In order to obtain good gear shifting performance, this chain has a forward side and a reverse side, and the sides are marked so that the chain will face the correct way when installed. The proper design performance will be obtained when the chain is installed so that it faces the correct way. If it is installed so that it faces the opposite way, the chain may come off and the bicycle may fall over and serious injury may occur as a result.**
- Check that the wheels are fastened securely before riding the bicycle. If the wheels are loose in any way, they may come off the bicycle and serious injury may result.
- Use the reinforced connecting pin only for connecting the narrow type of chain.

Chain	Reinforced connecting pin	Chain tool
10-speed super narrow chain for MTB	with groove (3) / with groove (2)	TL-CN32 TL-CN23 TL-CN27

- If connecting pins other than reinforced connecting pins are used, or if a reinforced connecting pin or tool which is not suitable for the type of chain is used, sufficient connection force may not be obtained, which could cause the chain to break or fall off.
- If it is necessary to adjust the length of the chain due to a change in the number of sprocket teeth, make the cut at some other place than the place where the chain has been joined using a reinforced connecting pin. The chain will be damaged if it is cut at a place where it has been joined with a reinforced connecting pin.



- Check that the tension of the chain is correct and that the chain is not damaged. If the tension is too weak or the chain is damaged, the chain should be replaced. If this is not done, the chain may break and cause serious injury.
- **Obtain and read the service instructions carefully prior to installing the parts.** Loose, worn or damaged parts may cause the bicycle to fall over and serious injury may occur as a result. We strongly recommend only using genuine Shimano replacement parts.
- **Obtain and read the service instructions carefully prior to installing the parts.** If adjustments are not carried out correctly, the chain may come off and this may cause you to fall off the bicycle which could result in serious injury.
- Read these Technical Service Instructions carefully, and keep them in a safe place for later reference.

Note

- If gear shifting operations do not feel smooth, wash the derailleur and lubricate all moving parts.
- If the amount of looseness in the links is so great that adjustment is not possible, you should replace the derailleur.
- You should periodically clean the derailleur and lubricate all moving parts (mechanism and pulleys).
- If gear shifting adjustment cannot be carried out, check the degree of parallelism at the rear end of the bicycle. Also check if the cable is lubricated and if the outer casing is too long or too short.
- If you hear abnormal noise as a result of looseness in a pulley, you should replace the pulley.
- If the wheel becomes stiff and difficult to turn, you should lubricate it with grease.
- Do not apply any oil to the inside of the hub, otherwise the grease will come out.
- You should periodically wash the sprockets in a neutral detergent and then lubricate them again. In addition, cleaning the chain with neutral detergent and lubricating it can be a effective way of extending the useful life of the sprockets and the chain.
- If the chain keeps coming off the sprockets during use, replace the sprockets and the chain.
- Use a frame with internal cable routing is strongly discouraged as it has tendencies to impair the SIS shifting function due to its high cable resistance.
- Always be sure to use the sprocket set bearing the same group marks. Never use in combination with a sprocket bearing a different group mark.

- Use an outer casing which still has some length to spare even when the handlebars are turned all the way to both sides. Furthermore, check that the shifting lever does not touch the bicycle frame when the handlebars are turned all the way.
- A special grease is used for the gear shifting cable. Do not use DURA-ACE grease or other types of grease, otherwise they may cause deterioration in gear shifting performance.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- For smooth operation, use the specified outer casing and the bottom bracket cable guide.
- Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.
- If the brake fluid used in the oil disc brakes is of a type which tends to adhere to the plastic parts of the shifting lever, this may cause the plastic parts to crack or become discolored. Therefore, you should make sure that the brake fluid does not adhere to these plastic parts.
  The mineral oil which is used in SHIMANO disc brakes does not cause cracking or discoloration if it adheres to plastic parts, but such parts should be cleaned with alcohol beforehand to prevent foreign particles from adhering.
- Do not disassemble the indicator and shifting lever unit, as this may damage them or cause mis-operation.
- Parts are not guaranteed against natural wear or deterioration resulting from normal use.
- For maximum performance we highly recommend Shimano lubricants and maintenance products
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Technical Service Instructions SI-6T9RA-001

Rear Drive System

In order to realize the best performance, we recommend that the following combination be used.

Series	SLX
RAPIDFIRE (Shifting lever)	SL-M660-10
Outer casing	OT-SP41 (SIS-SP41)
Rear derailleur	RD-M663
Type	SGS
Freehub	FH-M665
Gears	10
Cassette sprocket	CS-HG81-10
Chain	CN-HG74
Bottom bracket guide	SM-SP17

This service instruction explains how to use and maintain the Shimano bicycle parts which have been used on your new bicycle. For any questions regarding your bicycle or other matters which are not related to Shimano parts, please contact the place of purchase or the bicycle manufacturer.

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* Service Instructions in further languages are available at :
http://techdocs.shimano.com

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Specifications

Rear Derailleur

Model number	RD-M663
Type	SGS
Gears	10
Total capacity	43 T
Largest sprocket	36 T
Smallest sprocket	11 T
Front chainwheel tooth difference	18 T

Cassette sprocket tooth combination

Model number	Group name	Gears	Tooth combination
CS-HG81-10	**bJ**	10	11, 13, 15, 17, 19, 21, 23, 26, 30, 34 T
	bk	10	11, 13, 15, 17, 19, 21, 24, 28, 32, 36 T

Freehub

Model number	FH-M665
Gears	10
No. of spoke holes	36 / 32

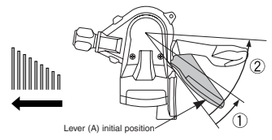
These Service Instructions describe the operation method when using the RAPIDFIRE SL-M660 in combination with the RD-M663 top normal-type rear derailleur.

Gear shifting operation

This release lever is equipped with a 2-way release mechanism which allows release operations to be carried out by either pushing or pulling the lever.
Both lever (A) and lever (B) always return to the initial position when they are released after shifting. When operating one of the levers, always be sure to turn the crank arm at the same time.

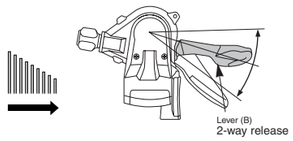
To shift from a small sprocket to a larger sprocket (Lever A)

To shift one step only, press lever (A) to the (1) position. To shift two steps at one time, press to the (2) position.



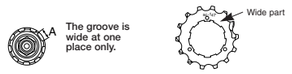
To shift from a large sprocket to a smaller sprocket (Lever B)

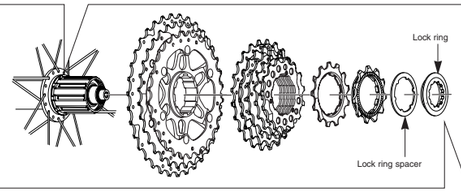
Press lever (B) once to shift one step from a larger to a smaller sprocket.



Installation of the sprockets

For each sprocket, the surface that has the group mark should face outward and be positioned so that the wider part of each sprocket and the A part (where the groove width is wide) of the freewheel body are aligned.

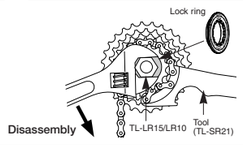




For installation of the HG sprockets, use the special tool (TL-LR15/LR10) to tighten the lock ring.

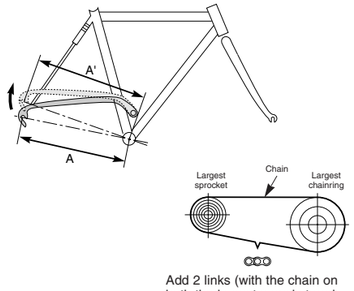
Tightening torque: 30 - 50 N·m {261 - 434 in. lbs.}

To replace the HG sprockets, use the special tool (TL-LR15/LR10) and TL-SR21 to remove the lock ring.



Chain length on bicycles with rear suspension

The length of A will vary depending on the movement of the rear suspension. Because of this, an excessive load may be placed on the drive system if the chain length is too short. Set the length of the chain by adding two links to the chain when the rear suspension is at a position where dimension "A" is longest and the chain is on the largest sprocket and the largest chainring. If the amount of movement of the rear suspension is large, the slack in the chain may not be taken up properly when the chain is on the smallest chainring and smallest sprocket.

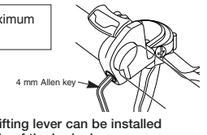


Add 2 links (with the chain on both the largest sprocket and the largest chainring)

Installation of the lever

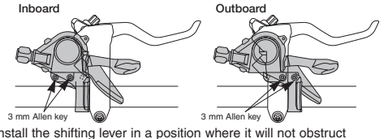
Use a handlebar grip with a maximum outer diameter of 36 mm.

Tightening torque : 5 N·m {44 in. lbs.}



If not using the indicator, this shifting lever can be installed either on the inside or the outside of the brake lever.
If adjusting the position, remove the indicator, and then be sure to secure it in the new position with the two fixing bolts.

Tightening torque : 2.5 N·m {22 in. lbs.}

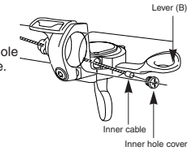


- Install the shifting lever in a position where it will not obstruct brake operation and gear shifting operation.
- Do not use in a combination which causes brake operation to be obstructed.
- When installing the components to carbon frame/handle bar surfaces, verify with the manufacturer of the carbon frame/parts for their recommendation on tightening torque in order to prevent over tightening that can cause damage to the carbon material and/or under tightening that can cause lack of fixing strength for the components.

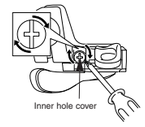
Refer to the RD-M663 (Rear Derailleur) Service Instructions for details on installing the rear derailleur and SIS adjustment.

Connection and securing of the inner cable

Operate lever (B) nine times or more, and check on the indicator that the lever is at the highest position. Then remove the inner hole cover and connect the inner cable.



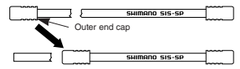
Install the inner hole cover by turning it as shown in the illustration until it stops.
Do not turn it any further than this, otherwise it may damage the screw thread.



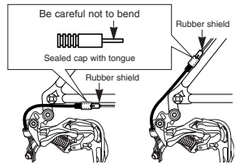
Cutting the outer casing

When cutting the outer casing, cut the opposite end to the end with the marking. After cutting the outer casing, make the end round so that the inside of the hole has a uniform diameter.

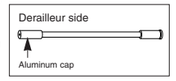
Attach the same outer end cap to the cut end of the outer casing.



The sealed cap with tongue and the rubber shield should be installed to the outer casing stopper of the frame.

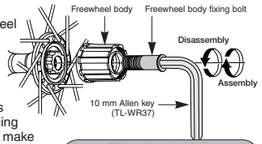


* If the rear derailleur moves to a large degree, such as in bicycles with rear suspension, it is recommended that you replace the cap with an aluminum cap. The end of the outer casing which has the aluminum cap should be at the derailleur side.



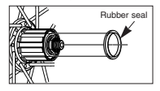
Replacement of the freewheel body

After removing the hub axle, remove the freewheel body fixing bolt (inside the freewheel body), and then replace the freewheel body.



Install the rubber seal as the last item after replacing the freewheel body, and make sure that it does not get clamped by the waterproof cap.

Tightening torque : 35 - 50 N·m {305 - 434 in. lbs.}



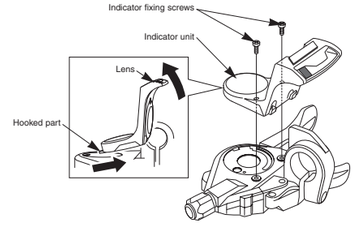
Note: Do not attempt to disassemble the freewheel body, because it may result in a malfunction.

Replacing and installing the indicator

Disassembly and reassembly should only be carried out when removing or replacing the indicator. For the front, the needle is in the opposite position.

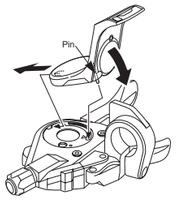
[Removal]

1. Operate lever B nine times or more to set the lever to the top position.
2. Remove the two indicator fixing screws which are securing the indicator.
3. Lift up the lens as shown in the illustration, and then disengage the hooked part and remove the indicator unit.



[Installation]

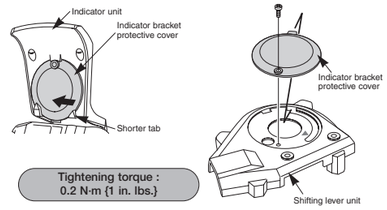
1. Operate lever B nine times or more to set the lever to the top position.
2. Check that the indicator needle is pointing to the left, and align the pin at the bottom of the indicator and the boss on the indicator with the △ marks on the shifting lever unit. Then insert the indicator into the shifting lever unit as shown in the illustration, starting with the boss and then followed by the pin in the reverse order to removal.
3. Tighten the two indicator fixing screws.
4. Check the operation of the indicator. If it does not operate correctly, reinstall it while paying particular attention to steps 1 and 2.



Tightening torque : 0.2 N·m {1 in. lbs.}

<If not installing the indicator>

1. Remove the indicator bracket protective cover which is attached to the indicator, starting from the shorter tab as shown in the illustration.
2. First insert the tab of the indicator bracket protective cover into the slot which does not have a △ mark, and then set it onto the shifting lever unit and secure it with the indicator fixing screw.

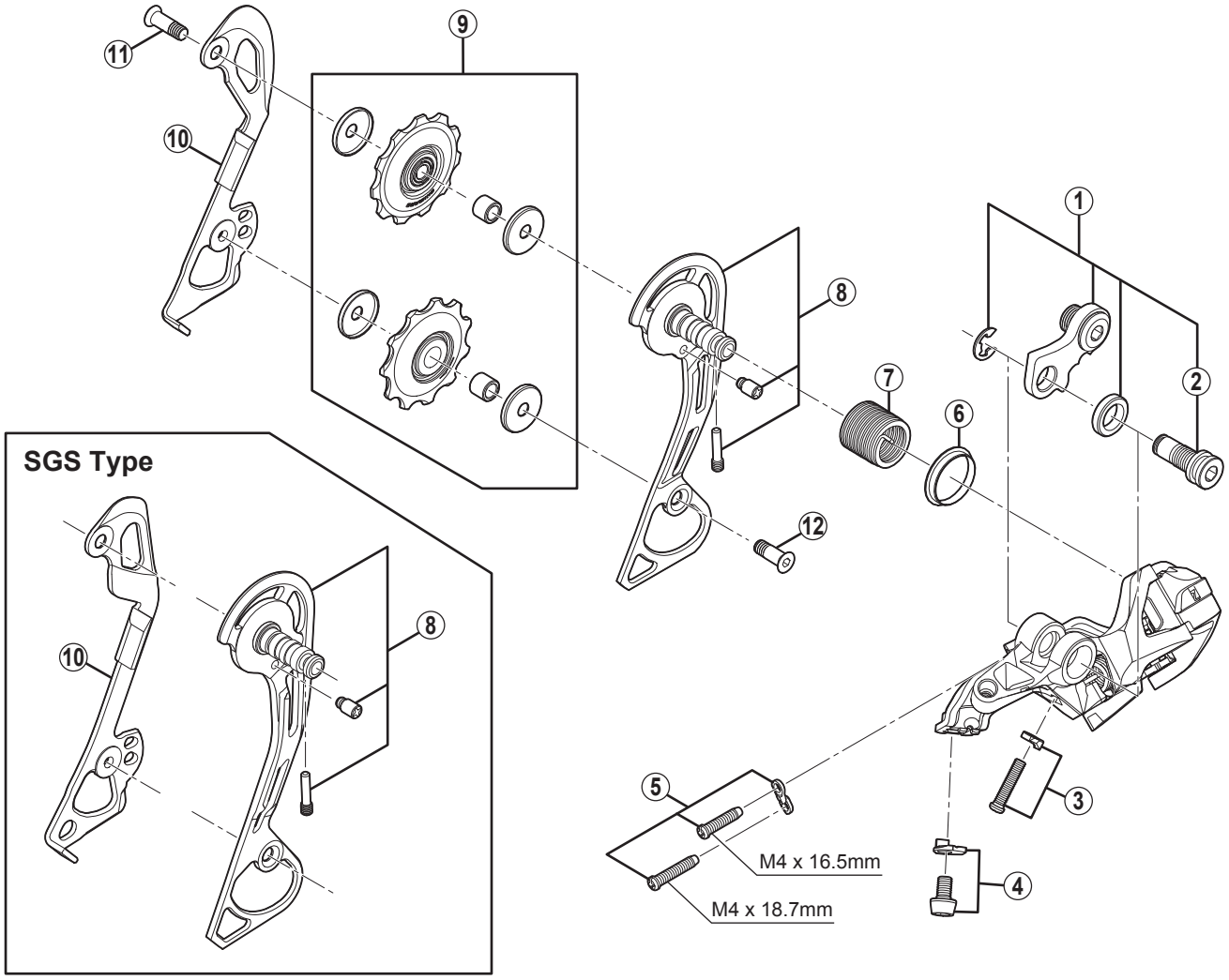


Tightening torque : 0.2 N·m {1 in. lbs.}

SHIMANO SLX Rear Derailleur

RD-M670 (GS/SGS)

RD-M670-D (GS/SGS)



RD-M781

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGEABILITY		
1	**Y50Y98010**	Bracket Axle Unit (for normal type)		B	
2	**Y50Y17000**	B-Axle2 (for Direct Mount type)		A	
3	**Y5XP98030**	B-Tension Adjusting Screw (M 4x 18) & Plate		A	
4	**Y5W798030**	Cable Fixing Bolt (M5 x 8) & Plate		A	
5	**Y5W798020**	Stroke Adjusting Screws & Plate		A	
6	**Y5UC14000**	P-Seal Ring		A	
7	**Y5W722000**	P-Tension Spring		A	
8	**Y50Y98020**	Outer Plate Assembly (GS-Type)		B	
	Y50Y98030	Outer Plate Assembly (SGS-Type)		B	
9	**Y5XE98030**	Guide & Tension Pulley Unit			
10	**Y5XC09100**	Inner Plate (GS-Type)		A	
	Y5Y010000	Inner Plate (SGS-Type)		A	
11	**Y53M24400**	Guide Pulley Bolt (M5 x 13.95)			
12	**Y53M24000**	Tension Pulley Bolt (M5 x 12.45)			

A: Same parts.
B: Parts are usable, but differ in materirals, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Mar.-2012-3406

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SHIMANO

UM-5Y40A-002-00

User's manual

Rear Derailleur

User's manuals in other languages are available at :
http://si.shimano.com

IMPORTANT NOTICE

- Contact the place of purchase or a bicycle dealer for information on installation and adjustment of the products which are not found in the user's manual. A dealer's manual for professional and experienced bicycle mechanics is available on our website (http://si.shimano.com).
- Do not disassemble or alter this product.

For safety, be sure to read this user's manual thoroughly before use, and follow them for correct use.

Important Safety Information

Guidelines that require replacement, contact the place of purchase or a bicycle dealer.

⚠ WARNING

- **Maintenance interval depends on the usage and riding circumstances. Clean regularly the chain with an appropriate chaincleaner. Never use alkali based or acid based solvents such as rust cleaners. If those solvent be used chain might break and cause serious injury.**
- Check the chain for any damage (deformation or crack), skipping, or other abnormalities such as unintended gear shifting. If any problems are found, consult a dealer or an agency. The chain may break, and you may fall.
- After reading the user's manual carefully, keep it in a safe place for later reference.

Note

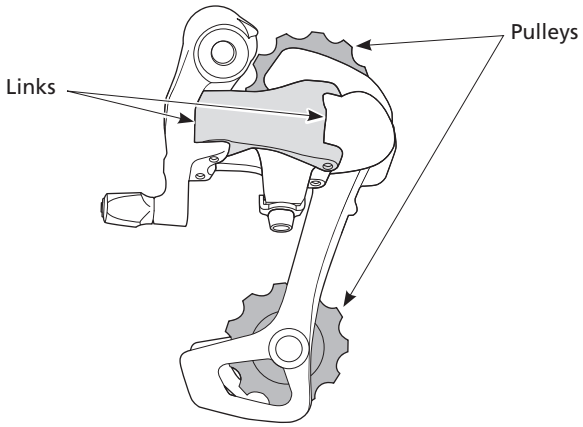
- If gear shifting operations cannot be carried out smoothly, clean the derailleur and lubricate all moving parts.
- You should periodically wash the sprockets in a neutral detergent. In addition, cleaning the chain with neutral detergent and lubricating it can be an effective way of extending the useful life of the sprockets and the chain.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

Regular inspections before riding the bicycle

Before riding the bicycle, check the following items. If any problems are found with the following items, contact the place of purchase or a bicycle dealer.

- Is gear shifting carried out smoothly?
- Do the links have large amounts of play in them?
- Do the pulleys have large amounts of play in them?
- Are the derailleurs making any abnormal noises?
- Is there any noticeable damage to the chain?

Names of parts



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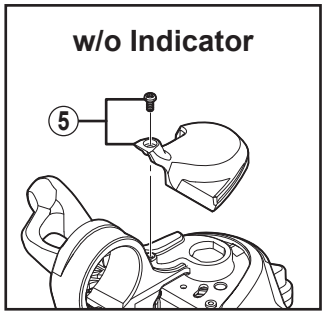
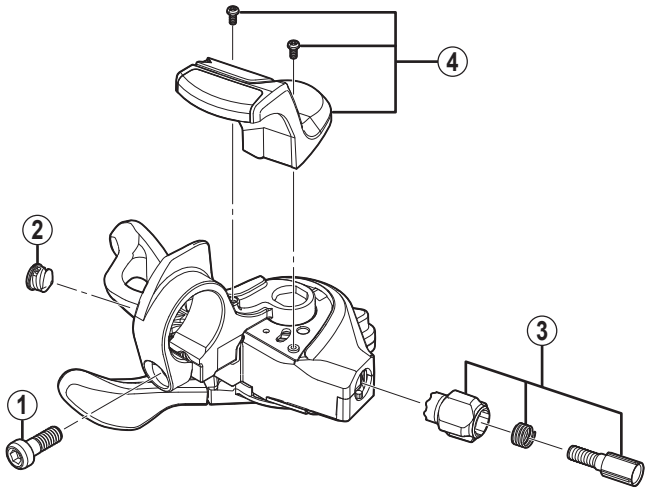
SHIMANO SLX Rapidfire Lever

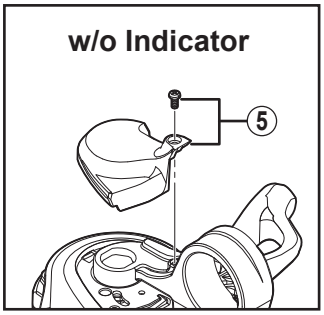
SL-M670

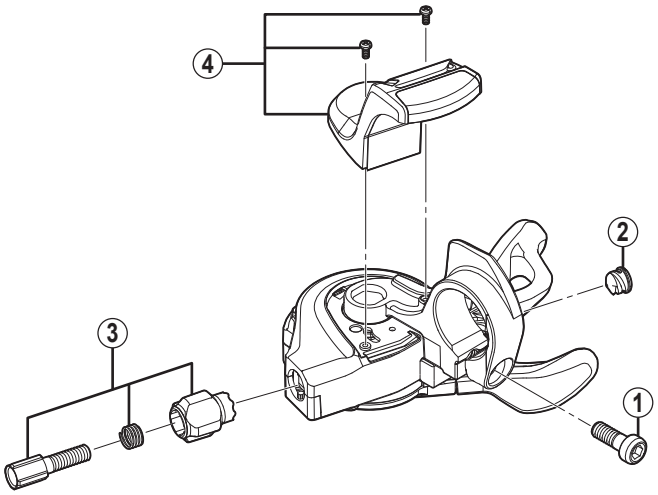
For Left Hand





For Right Hand





SL-M780

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGEABILITY		
1	**Y6T842000**	Clamp Bolt (M5 x 13.5)	A		
2	**Y6CD33000**	Inner Hole Cap	A		
3	**Y6TA98020**	R.H. Cable Adjustting Bolt Unit	A		
	Y6PZ98070	L.H. Cable Adjustting Bolt Unit	A		
4	**Y6VT98040**	R.H. Indicator Unit			
	Y6VU98020	L.H. Indicator Unit			
5	**Y6VT98060**	R.H. Base Cap & Bolt			
	Y6VU98040	L.H. Base Cap & Bolt			

A: Same parts.
B: Parts are usable, but differ in materirals, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Mar.-2012-3409
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Specifications are subject to change without notice.

SHIMANO

6VT0000000-6110-001
6VT0000000-6130-002
6VU0000000-6110-002
6VU0000000-6130-002

UM-6T80A-003-00 User's manual

Shifting Lever (2-WAY RELEASE)

User's manuals in other languages are available at :
http://si.shimano.com

IMPORTANT NOTICE

- Contact the place of purchase or a bicycle dealer for information on installation and adjustment of the products which are not found in the user's manual. A dealer's manual for professional and experienced bicycle mechanics is available on our website (http://si.shimano.com).
- Do not disassemble or alter this product.

For safety, be sure to read this user's manual thoroughly before use, and follow them for correct use.

Important Safety Information

Guidelines that require replacement, contact the place of purchase or a bicycle dealer.

⚠ WARNING

- After reading the user's manual carefully, keep it in a safe place for later reference.

Note

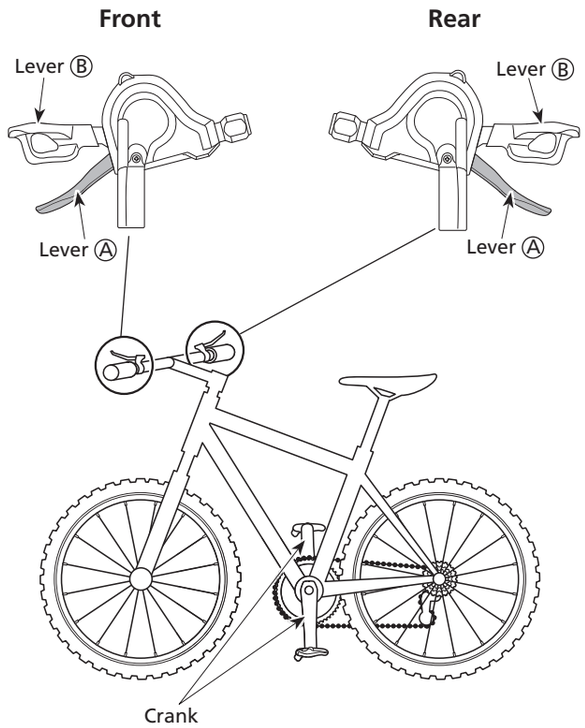
- Be sure to keep turning the crank during the lever operation.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

Regular inspections before riding the bicycle

Before riding the bicycle, check the following items. If any problems are found with the following items, contact the place of purchase or a bicycle dealer.

- Is gear shifting carried out smoothly?
- Are the levers securely installed to the handlebar?
- Do any abnormal noises occur during operation?

Names of parts



Operation

Gear shifting operation

Be sure to keep turning the crank during the lever operation.

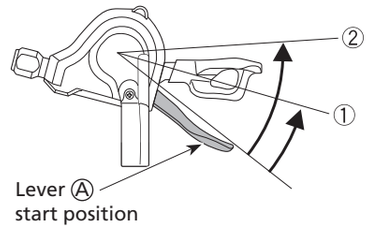
Caution on operation

Both lever Ⓐ and Ⓑ always return to the start position after shifting.

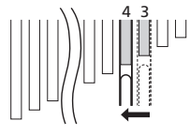
Operation of rear derailleur lever

You can vary the lever stroke to shift the desired number of gears, so that to shift by one gear only, move the lever to the ① position, and to shift by two gears at one time, move the lever to the ② position.

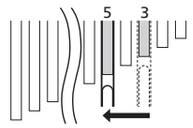
- Lever Ⓐ : Shifts from smaller to larger rear sprocket.



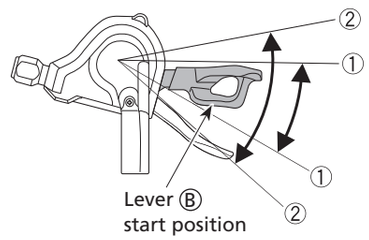
① : **Shifts one sprocket**
E.x. : from 3rd to 4th



② : **Quick-shifts two sprockets**
E.x. : from 3rd to 5th

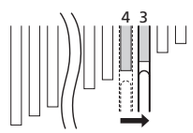


- Lever Ⓑ : Shifts from larger to smaller rear sprocket.



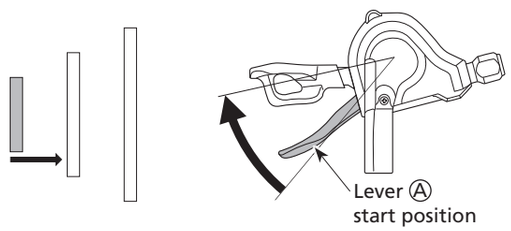
"You can shift gears either by pushing or pulling the lever."
Some models allow two-step gear shifting.

E.x. : from 4th to 3rd

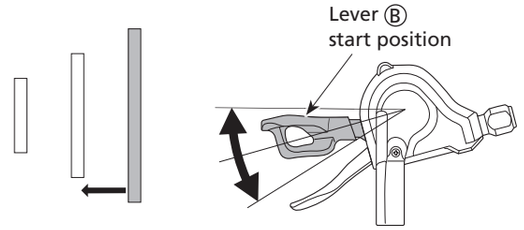


Operation of front derailleur levers

- Lever Ⓐ : Shifts from smaller to larger front chainring.



- Lever Ⓑ : Shifts from larger to smaller front chainring.



"You can shift gears either by pushing or pulling the lever."

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(English)
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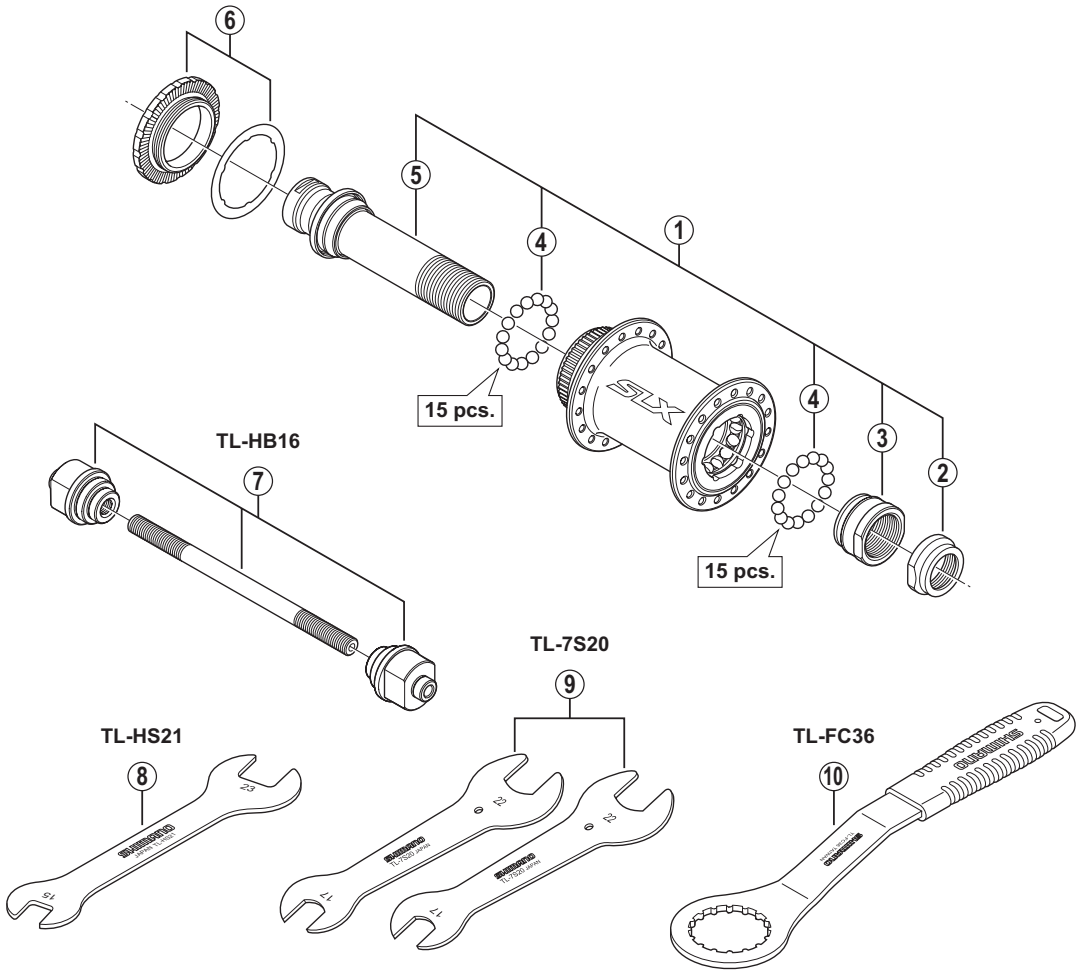
SHIMANO SLX Front Hub

HB-M678 For Disc Brake



HB-M788

• Over Lock Nut Dimension: 100 mm (3-15/16")

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGE-ABILITY
1	**Y2UK98010**	Complete Hub Axle	
2	**Y2UC09000**	Lock Nut (M19)	B
3	**Y2UK06000**	Right Hand Cone (M19)	
4	**Y25U98020**	Steel Ball (3/16") 36 pcs.	
5	**Y2UK98020**	Hub Axle 96 mm	
6	**Y26L98030**	Lock Ring & Washer	A
7	**Y20W98020**	TL-HB16 Hub Setting Tool	A
8	**Y3C228000**	TL-HS21 Hub Spanner (15 mm x 23 mm)	A
9	**Y13098900**	TL-7S20 Hub Spanner (17 mm x 22 mm) 2 pcs.	A
10	**Y13098000**	TL-FC36 for Lock Ring Removal Tool	A

A: Same parts.
B: Parts are usable, but differ in materials, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Mar.-2012-3405

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SHIMANO

UM-2UK0A-001-00

User's manual

Front Hub (for E-Thru)

User's manuals in other languages are available at :
http://si.shimano.com

IMPORTANT NOTICE

- Contact the place of purchase or a bicycle dealer for information on installation and adjustment of the products which are not found in the user's manual. A dealer's manual for professional and experienced bicycle mechanics is available on our website (http://si.shimano.com).
- Do not disassemble or alter this product.

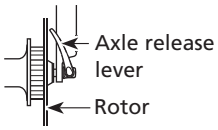
For safety, be sure to read this user's manual thoroughly before use, and follow them for correct use.

Important Safety Information

Guidelines that require replacement, contact the place of purchase or a bicycle dealer.

⚠ WARNING

- **Check that the wheels are fastened securely before riding the bicycle. If the wheels are loose in any way, they may come off the bicycle and serious injury may result.**
- This front hub is not designed for downhill bicycle riding and freeriding. Depending on the riding conditions, the hub axle could develop cracks which may result in failure of the hub axle. This can lead to an accident that could result in serious injury or even death. Before riding, you should carefully check your hubs to make sure that there are no cracks in the axles, and if you find any sign of a crack or any other unusual condition, DO NOT use the bicycle.
- This hub can be used in combination with a special front fork and the E-Thru. If it is used in combination with any other front fork or fixed axle, it may cause the wheel to become detached from the bicycle while you are riding and result in serious bodily injury.
- The securing method and tightening torque for the front wheel both vary depending on the type of front suspension fork being used. When installing the front wheel to the front suspension fork, always be sure to follow the directions given in the Service Instructions for the front suspension fork. If the directions are not followed, the front wheel may fall out of the front suspension fork and serious injury may result.
- If the axle release lever is on the same side as the rotor, there is the danger that it may interfere with the rotor. Make sure that even if the axle release lever is tightened with your palm with all your strength, the axle release lever does not interfere with the rotor. If the lever interferes with the rotor, stop using the wheel and consult a dealer or an agency.



- After reading the user's manual carefully, keep it in a safe place for later reference.

Note

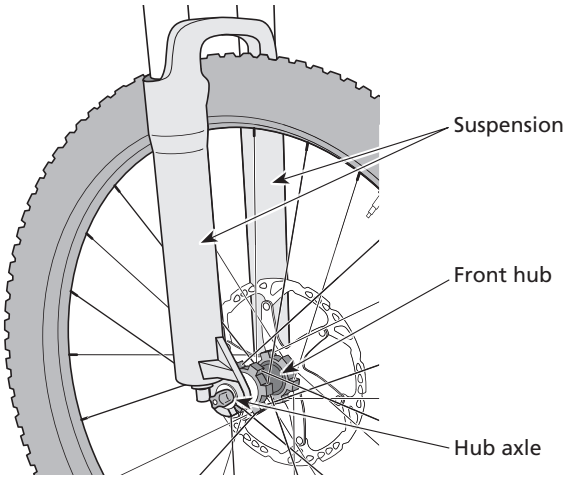
- Do not apply any lubricant to the inside of the hub, otherwise the grease will come out.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

Regular inspections before riding the bicycle

Before riding the bicycle, check the following items. If any problems are found with the following items, contact the place of purchase or a bicycle dealer.

- Are the wheels fixed?
- Do the wheels rotate smoothly?
- Are there any abnormal noises?

Names of parts



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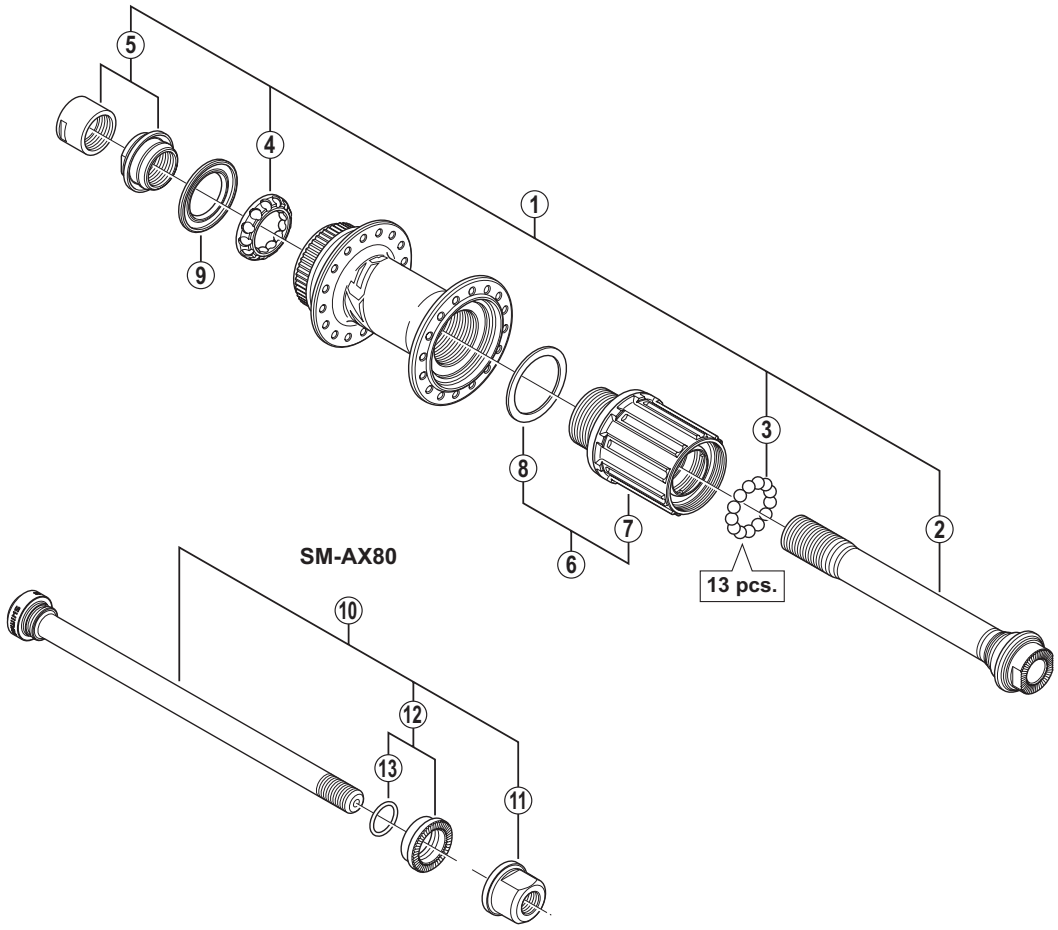
SHIMANO ZEE Freehub (8/9/10-Speed) for Disc Brake

FH-M640
SM-AX80



• Over Lock Nut Dimension: 135 mm (5-5/16")

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGE-ABILITY FH-M810	FH-M820
1	**Y3TS98010**	Complete Hub Axle (ø10)		
	Y3TS98020	Complete Hub Axle (ø12)		
2	**Y3TS98030**	Hub Axle (ø10)	A	
	Y3TS98040	Hub Axle (ø12)	A	
3	**Y00091210**	Steel Ball (3/16") 20 pcs.	A	A
4	**Y3D498050**	Ball Retainer (3/16")	A	A
5	**Y3TS98050**	Left Hand Lock Nut (M15) & Cone (M15) w/Dust Cover		
6	**Y3TS98060**	Complete Freewheel Body		
7	**Y3TS98070**	Freewheel Body Unit		
8	**Y3CZ12000**	Freewheel Body Washer	A	A
9	**Y26D10000**	Seal Ring	A	A
10	**Y27N98010**	SM-AX80 Axle Unit (ø10) M10 x 168 mm	A	A
	Y27N98020	SM-AX80 Axle Unit (ø12) M12 x 168 mm	A	A
11	**Y27N04000**	Axle Nut (M10)	A	A
	Y27N04010	Axle Nut (M12)	A	A
12	**Y3C298020**	Spacer & Axle O-Ring	A	A
13	**Y3C222000**	Axle O-Ring	A	A

A: Same parts.
B: Parts are usable, but differ in materials, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Apr.-2012-3434
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Specifications are subject to change without notice.

SHIMANO

UM-3TS0A-001-00

User's manual

Rear Freehub (for Downhill/Freeride)

User's manuals in other languages are available at :
http://si.shimano.com

IMPORTANT NOTICE

- Contact the place of purchase or a bicycle dealer for information on installation and adjustment of the products which are not found in the user's manual. A dealer's manual for professional and experienced bicycle mechanics is available on our website (http://si.shimano.com).
- Do not disassemble or alter this product.

For safety, be sure to read this user's manual thoroughly before use, and follow them for correct use.

Important Safety Information

Guidelines that require replacement, contact the place of purchase or a bicycle dealer.

⚠ WARNING

- **Downhill bicycle riding and freeriding are inherently dangerous activities. There is a risk of being involved in an accident that can result in a serious injury or even death. It is strongly recommended that riders wear protective head and body gear and perform thorough safety checks of their bicycles before riding. Please remember that you are riding at your own risk and that you have to consider your experience and your skills very carefully.**
- **Check that the wheels are fastened securely before riding the bicycle. If the wheels are loose in any way, they may come off the bicycle and serious injury may result.**
- This freehub is designed for downhill bicycle riding and freeriding. Depending on the riding conditions, the hub axle could develop cracks which may result in failure of the hub axle. This can lead to an accident that could result in serious injury or even death. Before riding, you should carefully check your hubs to make sure that there are no cracks in the axles, and if you find any sign of a crack or any other unusual condition, DO NOT use the bicycle.
- We strongly recommend that you use the hub axle that is shipped with the Shimano hub. If you use a different hub axle to secure the hub, it may not have sufficient strength to secure the freehub, or the axle may break because of insufficient strength, and this may cause the wheel to fall off, and serious injury may occur.
- After reading the user's manual carefully, keep it in a safe place for later reference.

Note

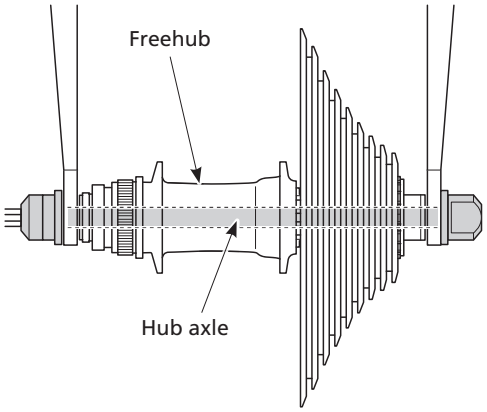
- Do not apply any lubricant to the inside of the hub, otherwise the grease will come out.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

Regular inspections before riding the bicycle

Before riding the bicycle, check the following items. If any problems are found with the following items, contact the place of purchase or a bicycle dealer.

- Are the wheels fixed?
- Do the wheels rotate smoothly?
- Are there any abnormal noises?

Names of parts



SHIMANO

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Please note: specifications are subject to change for improvement without notice. (English)
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MAXLE

Maxle™ & Maxle Lite™
User Manual

Maxle™ & Maxle Lite™
Bedienungsanleitung

Maxle™ & Maxle Lite™
Manual de usuario

Maxle™ et Maxle Lite™
Guide de l'utilisateur

Maxle™ & Maxle Lite™
Manuale per l'utente

Maxle™ & Maxle Lite™
Gebruiksaanwijzing

Maxle™ e Maxle Lite™
Manual do utilizador

Maxle™ および Maxle Lite™
ユーザー・マニュアル

Maxle™ & Maxle Lite™
用户手册

SRAM®

95-4318-007-000 Rev A

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⚠WARNING

Riding with an improperly installed wheel can allow the wheel to move or disengage from the bicycle, causing damage to the bicycle, and serious injury or death to the rider. It is essential that you:

- Ensure that your axle, dropouts, and quick release mechanisms are clean and free of dirt or debris.
- Ask your dealer to help you understand how to properly secure your front wheel using the Maxle™ quick release thru axle system.
- Apply the correct techniques when installing your wheels.

⚠AVERTISSEMENT

Si vous roulez avec un vélo dont la roue n'a pas été correctement fixée, celle-ci peut bouger ou se détacher, ce qui risque d'endommager le vélo et de vous exposer à des blessures graves, voire mortelles. Respectez les consignes suivantes :

- Vérifiez que l'axe, les pattes de fixation et les dispositifs de blocage rapide sont propres et non obstrués par de la saleté ou des débris.
- Demandez à votre revendeur de vous montrer comment fixer correctement la roue avant à l'aide du système de blocage rapide à axe traversant Maxle™.
- Installez vos roues en respectant les procédures recommandées.

⚠AVISO

Conduzir uma bicicleta com uma roda mal instalada pode permitir que a roda se mova ou desencaixe da bicicleta, causando danos à bicicleta e lesões graves ou mesmo fatais ao ciclista. É essencial que:

- Assegure que o seu eixo, encaixes e mecanismo de aperto/desprendimento rápido estejam limpos e isentos de detritos ou sujidade.
- Peça ao seu concessionário que o ajude a compreender como prender com segurança a roda dianteira usando o sistema Maxle™ Quick Release de eixo de atravessamento com desprendimento rápido.
- Aplique as técnicas correctas ao instalar as suas rodas.

⚠WARNUNG

Wenn Sie mit einem unsachgemäß eingebauten Laufrad fahren, kann sich das Laufrad bewegen oder vom Fahrrad lösen. Dies kann zu Schäden am Fahrrad und zu schweren oder lebensgefährlichen Verletzungen des Fahrers führen. Beachten Sie stets die folgenden Hinweise:

- Achten Sie darauf, dass die Achse, Ausfallenden und Schnellspannmechanik sauber und frei von Schmutz und Verunreinigungen sind.
- Bitten Sie Ihren Händler, Ihnen genau zu erläutern, wie Sie Ihr Vorderrad mit dem Maxle™ Steckachsen-Schnellspannsystem richtig befestigen.
- Bauen Sie die Laufräder ordnungsgemäß ein.

⚠AVVERTENZA

Guidare una bicicletta con una ruota non correttamente installata può far sì che la ruota si sposti o si sganci, provocando danni alla bicicletta e lesioni gravi, anche mortali, al biker. È essenziale:

- Assicurarsi che l'asse, i forcellini e i meccanismi dello sgancio rapido siano puliti e privi di detriti o sporcizia.
- Farsi aiutare dal rivenditore per capire come fissare correttamente la ruota anteriore utilizzando il sistema di sgancio rapido dell'asse passante Maxle™.
- Servirsi delle tecniche corrette per installare le ruote.

⚠警告

ホイールを正確に装着していない自転車をご利用になると、走行中にホイールが動いたり、あるいは自転車から外れてしまい、自転車を破損させるだけでなく、お客様が致命的な大怪我をされる危険性があります。必ず以下の事項を実行してください：

- アクスル、ドロップアウト、クイック・リリース機構がきれいに保たれ、ゴミなどの汚れがないかどうか確認してください。
- Maxle™ クイック・リリース・スルーアクスル・システムによるフロント・ホイールの適正な固定方法が分からない場合は、お買い上げの販売代理店にお問い合わせください。
- ホイールを装着する場合は、正しい方法で装着してください。

⚠ATENCIÓN

Si se utiliza la bicicleta con una rueda mal instalada, ésta podría moverse o soltarse del vehículo y ocasionar daños en el mismo y lesiones graves e incluso mortales al ciclista. Por ello, es fundamental que respete las siguientes indicaciones:

- Asegúrese de que el eje, las punteras y el mecanismo de desmontaje rápido estén limpios y sin rastro de suciedad o residuos.
- Pídale a su distribuidor que le explique cómo sujetar bien la rueda delantera con el sistema de desmontaje rápido por eje pasante Maxle™.
- Instale las ruedas siguiendo el método adecuado.

⚠WAARSCHUWING

Door te rijden met een onjuist wiel kan het wiel losraken, wat tot schade kan leiden aan de fiets en ernstig letsel of dood van de gebruiker. Het is uitermate belangrijk dat u:

- Ervoor zorgt dat de as, de openingen en de snelsluitingsmechanismen schoon zijn, en geen modder of gruis bevatten.
- Uw verkooppunt vraagt om u uit te leggen hoe u uw voorwiel op de juiste manier kunt vastzetten met het Maxle™ doorvoerassysteem met snelsluiting.
- De juiste technieken voor het installeren van uw wielen gebruikt.

⚠警告

车轮安装不当可能会令骑行时车轮移动或从自行车上脱离，导致自行车损坏以及人员严重受伤甚至死亡。您必须：

- **确保自行车轴、钩爪和快脱机构清洁，无污垢或碎屑。**
- **咨询经销商，以了解如何使用 Maxle™ 快脱插轴系统正确地安装前轮。**
- **以正确的方法安装车轮。**

NOTICE

The Maxle™ quick release thru axle system allows the use of a thru axle hub for enhanced stiffness. The axle threads into the dropout and compresses the hub. The axle is fixed into place by the Maxle quick release lever.
Never use any other tool to tighten the axle into the drop outs. Over-tightening of the axle can damage the axle and/or the drop outs.

AVIS

Avec le système de blocage rapide à axe traversant Maxle™, vous pouvez utiliser un moyeu pour axe traversant pour une meilleure rigidité. L'axe se visse dans la patte de fixation et vient comprimer le moyeu. L'axe est maintenu en place grâce au levier du blocage rapide Maxle.
N'utilisez jamais d'outil pour serrer l'axe dans les pattes de fixation. Un serrage excessif de l'axe peut endommager l'axe et/ou les pattes de fixation.

NOTIFICAÇÃO

O sistema de eixo de atravessamento com desprendimento rápido Maxle™ permite a utilização de um cubo de eixo de atravessamento para maior rigidez. O eixo enrosca no encaixe e comprime o cubo. O eixo é fixado no seu lugar pela alavanca Maxle de desprendimento rápido.
Nunca utilize qualquer outra ferramenta para apertar o eixo nos encaixes. Apertar demasiado o eixo poderá danificar o eixo e/ou os encaixes.

HINWEIS

Mit dem Maxle™ Steckachsen-Schnellspannsystem können Sie eine Steckachsennabe verwenden, um die Steifigkeit zu erhöhen. Die Achse wird in das Ausfallende geschraubt und drückt die Nabe zusammen. Die Achse wird durch den Maxle-Schnellspannhebel in Position gehalten.
Verwenden Sie keine anderen Werkzeuge, um die Achse in den Ausfallenden zu fixieren. Wenn die Achse zu fest angezogen wird, kann dies die Achse und/oder die Ausfallenden beschädigen.

AVVISO

Il sistema di sgancio rapido dell'asse passante Maxle™ permette di utilizzare un mozzo con asse passante per migliorare la rigidità. L'asse si infila nel forcellino e comprime il mozzo. L'asse viene bloccato in posizione dalla leva di sgancio rapido Maxle.
Non utilizzare mai altri attrezzi per serrare l'asse nei forcellini. Serrando eccessivamente l'asse si possono danneggiare l'asse stesso e/o i forcellini.

注意事項

Maxle™ クイック・リリース・スルーアクスル・システムでは、スルーアクスル・ハブを使用して、硬さを増すことができます。軸をドロップアウトに差し込み、ハブを圧縮します。Maxle クイック・リリース・レバーで、軸を所定の位置に固定します。
軸をドロップアウト内に締める際には、決して他の工具を使用しないでください。軸を強く締めすぎると、軸および/またはドロップアウトの破損の原因となりますので、ご注意ください。

AVISO

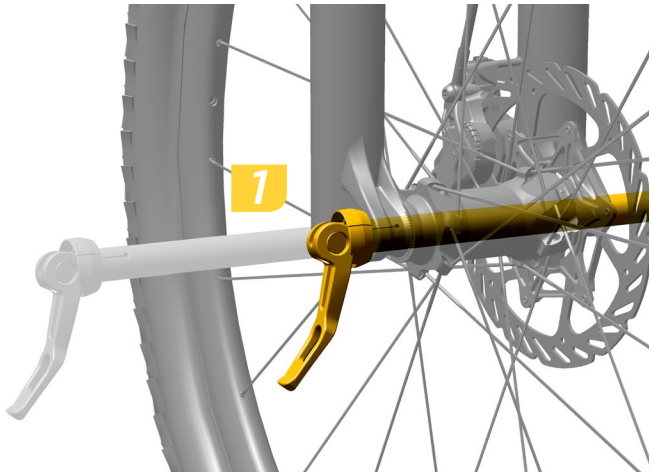
El sistema de desmontaje rápido con eje pasante Maxle™ permite utilizar un buje para eje pasante para conseguir mayor rigidez. El eje se enrosca a la puntera y comprime el buje. El eje va fijado a su posición de montaje mediante la palanca de desmontaje rápido Maxle.
No utilice nunca ninguna otra herramienta para apretar el eje a las punteras de la horquilla. Si aprieta demasiado el eje, podría estropearse y/o dañar la puntera.

MEDEDELING

Met het Maxle™ doorvoerassysteem met snelsluiting kan een doorvoerasnaaf worden gebruikt voor meer stijfheid. Schroef de as in de de opening zodat de naaf wordt samengedrukt. De as wordt door de Maxle snelsluithendel op zijn plaats vastgezet.
Gebruik nooit ander gereedschap om de as in de openingen vast te schroeven. De as te strak vastzetten kan de as en/of de openingen beschadigen.

须知

Maxle™ 快脱插轴系统允许使用插轴轮毂，以增强紧固性。将轴旋入钩爪并压紧轮毂。用Maxle快脱杆将轴固定到位。
请勿使用任何其他工具将轴紧固到钩爪中。轴上得过紧可能损坏轴及/或钩爪。



Engage the Maxle™ lever into the notch on the axle flange.

Platzieren Sie den Maxle™-Hebel in der Aussparung im Achsenflansch.

Encaje la palanca Maxle™ en la muesca que hay en el reborde del eje.

Engagez le levier Maxle™ dans le cran situé sur le flasque de l'axe.

Innestare la leva Maxle™ nella tacca sulla flangia dell'asse.

Zet de Maxle™ hendel vast in de inkeping op de asflens.

Enfie a alavanca do Maxle™ no entalhe da flange do eixo.

Maxle™ レバーをアクスル・フランジのノッチ内にかみ合わせます。

将 Maxle™ 杆嵌入轴法兰的槽口。

Thread the Maxle into the fork leg by hand and tighten it until it stops.

Schrauben Sie den Maxle von Hand in das Gabelbein und ziehen Sie ihn bis zum Anschlag fest.

Enrosque la palanca Maxle al brazo de la horquilla, apretándola a tope con la mano.

Vissez le Maxle dans le bras de la fourche à la main puis serrez-le jusqu'à ce qu'il se bloque.

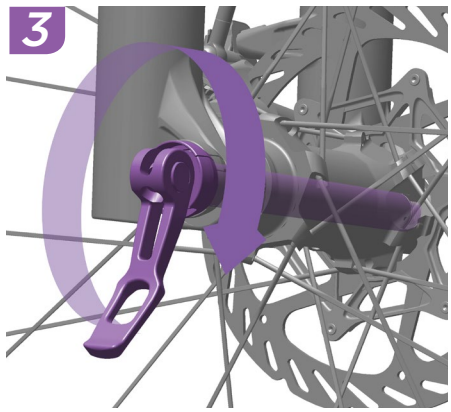
Infilare Maxle nella gamba della forcella a mano e serrarlo finché si ferma.

Draai de Maxle met de hand vast in het vorkbeen tot u niet meer verder kunt draaien.

Enrosque o Maxle no braço do garfo com a sua mão e aperte-o até que ele pare.

Maxle をフォーク・レッグ内に手で回し入れ、止まるまで締めます。

用手将 Maxle 旋入前叉管并拧紧，直至旋不动。



Disengage the Maxle lever from the notch in the axle flange.

Entfernen Sie den Maxle-Hebel aus der Aussparung im Achsenflansch.

Desencaje la palanca Maxle de la muesca del reborde del eje.

Désengagez le levier Maxle du cran situé sur le flasque de l'axe.

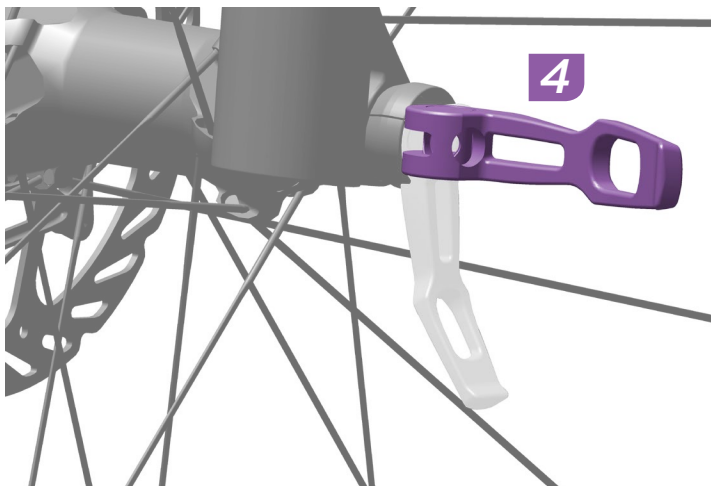
Disinnestare la leva Maxle dalla tacca sulla flangia dell'asse.

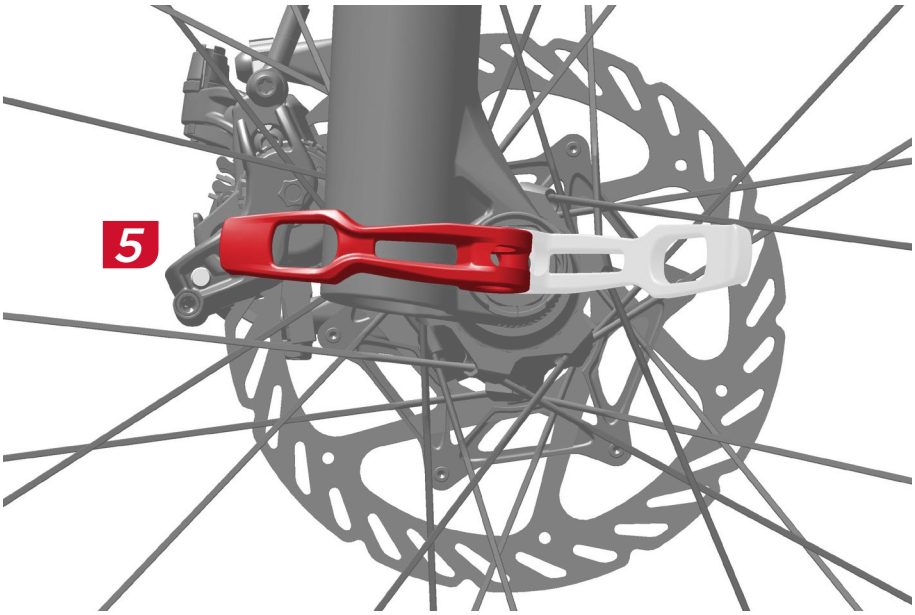
Maak de Maxle hendel los van de inkeping op de asflens.

Desenfie a alavanca do Maxle™ do entalhe da flange do eixo.

Maxle レバーを、アクスル・フランジ内のノッチから外します。

将 Maxle 杆从轴法兰的槽口中拔出。





Secure the Maxle™ in place by closing the lever to the horizontal position. Lever tension is sufficient if the lever leaves an imprint on your hand.

Fixieren Sie den Maxle™, indem Sie den Hebel in waagerechter Stellung schließen. Die Hebelspannung ist ausreichend, wenn der Hebel auf Ihrer Handfläche einen Abdruck hinterlässt.

Fije la palanca Maxle™ en su posición, cerrando la palanca de modo que quede en posición horizontal. La tensión de la palanca será suficiente si la palanca le deja marca en la mano.

Mettez le Maxle™ en place en faisant pivoter le levier en position horizontale afin de le fermer. La tension du levier est suffisante à partir du moment où le levier vous laisse une petite marque sur la main.

Bloccare Maxle™ in posizione chiudendo la leva in posizione orizzontale. La tensione sulla leva è sufficiente quando la stessa lascia un'impronta sulla mano.

Zet de Maxle™ op zijn plaats vast door de hendel in horizontale positie te sluiten. Er is voldoende spanning op de hendel als de hendel een afdruk in uw hand achterlaat.

Fixe o Maxle™ no seu lugar fechando a alavanca para a posição horizontal. A tensão na alavanca será suficiente se a alavanca deixar uma marca impressa na sua mão.

レバーを平行のポジションに動かして閉じ、Maxle™ を所定の位置にきちんと固定します。レバーの跡が手に付けば、レバーのテンションは十分です。

合拢杆体至水平位置，将 Maxle™ 紧固到位。如果杆体在手掌上留下印迹，则说明其已充分张紧。

⚠WARNING

After closing the Maxle quick release lever, do not reposition or spin the lever. Repositioning or spinning the Maxle lever can cause the axle to come loose, compromising the security of the axle which can lead to serious injury and/or death.

⚠WARNUNG

Nach dem Schließen darf der Maxle-Schnellspanner nicht verstellt oder gedreht werden. Wenn der Maxle-Schnellspanner verstellt oder gedreht wird, kann sich die Achse lösen, sodass die Sicherheit erheblich beeinträchtigt wird. Dies kann zu schweren oder tödlichen Verletzungen führen.

⚠ATENCIÓN

Una vez haya cerrado la palanca de desmontaje rápido Maxle, no cambie de posición la palanca ni la haga girar. Si cambia de posición la palanca Maxle o la hace girar, puede que el eje se suelte, lo que supone un riesgo para la seguridad del eje y puede ocasionar al ciclista lesiones graves e incluso mortales.

⚠AVERTISSEMENT

Après avoir fermé le levier de blocage rapide Maxle, n'essayez pas de repositionner ou de faire pivoter le levier. Si vous repositionnez ou faites pivoter le levier Maxle, l'axe risque de prendre du jeu ce qui peut compromettre la sécurité de l'axe et/ou provoquer des blessures graves, voire mortelles.

⚠AVVERTENZA

Dopo aver chiuso la leva di sgancio rapido Maxle, non riposizionare né ruotare la leva. Il riposizionamento o la rotazione della leva Maxle possono causare l'allentamento dell'asse, compromettendo la sicurezza dell'asse, il che può comportare gravi lesioni e/o la morte.

⚠WAARSCHUWING

Draai de Maxle met de hand vast in het vorkbeen tot u niet meer verder kunt draaien. Als de positie van de Maxle hendel gewijzigd wordt of deze rondgedraaid wordt, kan de as losraken, waardoor de veiligheid van de as in gevaar komt. Dit kan leiden tot ernstig letsel en/of de dood.

⚠AVISO

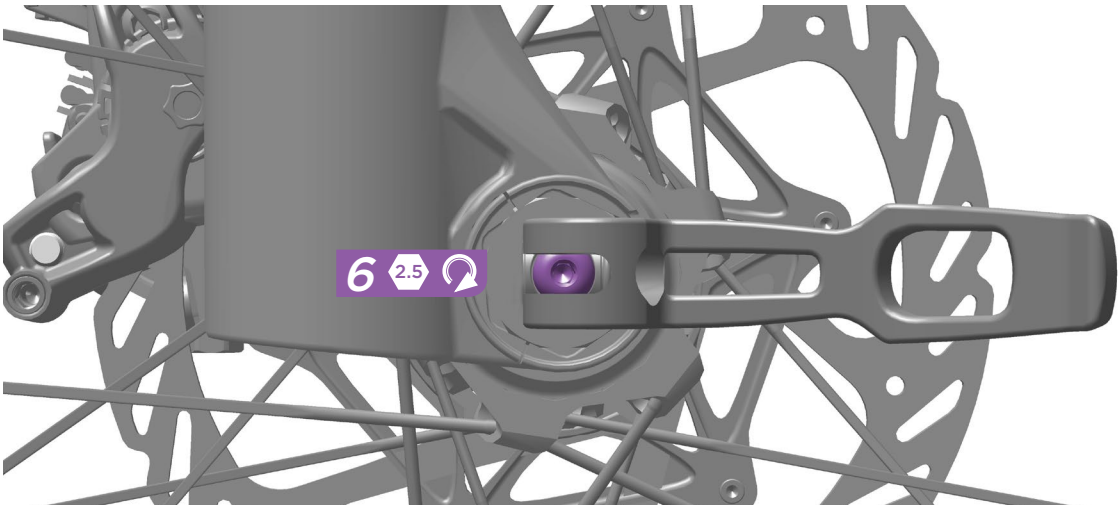
Depois de fechar a alavanca de desprendimento rápido Maxle, não altere a posição nem rode a alavanca. Alterar a posição ou rodar a alavanca de desprendimento rápido Maxle pode fazer com que o eixo de solte, comprometendo a segurança do eixo, o que pode provocar graves ferimentos e/ou morte.

⚠警告

Maxle クイック・リリース・レバーを閉じた後、レバーの位置を変えたり、回転させたりしないでください。Maxle レバーの位置を変えたり回転させたりすると、軸が緩む原因となって軸の安全性が損なわれ、重傷および/または死亡の原因となりかねない事故につながる場合があります。

⚠警告

在合拢 Maxle 快脱杆后，不得重新定位或转动快脱杆。重新定位或转动Maxle杆会令轴变松，影响轴的安全性，进而引起严重的人身伤害和/或死亡。



To increase lever tension, open the lever and position it in the notch. Use a 2.5 mm hex wrench to turn the tension adjuster clockwise one click. Close the lever to recheck tension. Repeat until the tension is sufficient, then close the lever in the desired position.

Um die Hebelspannung zu erhöhen, öffnen Sie den Hebel und platzieren Sie ihn in der Aussparung. Drehen Sie den Spannungseinsteller mit einem 2,5-mm-Inbusschlüssel einen Klick gegen den Uhrzeigersinn. Schließen Sie den Schnellspannhebel, um die Spannung erneut zu prüfen. Wiederholen Sie den Vorgang, bis die Spannung ausreicht, und schließen Sie den Schnellspannhebel in der gewünschten Position.

Para aumentar la tensión de la palanca, ábrala y colóquela en la muesca. Con una llave Allen de 2,5 mm, gire un clic en sentido horario el regulador de tensión. Cierre la palanca para volver a comprobar la tensión. Repita la operación hasta conseguir la tensión suficiente, y luego deje cerrada la palanca en la posición que desee.

Pour augmenter la tension du levier, mettez-le en position ouverte et bloquez-le dans le cran. À l'aide d'une clé hexagonale de 2,5 mm, faites tourner le système de réglage de la tension d'un clic dans le sens des aiguilles d'une montre. Rabattez le levier en position fermée afin de vérifier à nouveau la tension. Répétez l'opération jusqu'à ce que la tension soit suffisante, puis rabattez le levier en position fermée, dans la position souhaitée.

Per aumentare la tensione sulla leva, aprirla e posizionarla nella tacca. Utilizzare una chiave esagonale da 2,5 mm per ruotare il regolatore di tensione di uno scatto in senso orario. Chiudere la leva per ricontrollare la tensione. Ripetere l'operazione fino al raggiungimento del grado di tensione sufficiente. Quindi chiudere la leva nella posizione desiderata.

Om de spanning te verhogen, opent u de hendel en plaatst u deze in de inkeping. Draai de spanningsregelaar één klik met de klok mee met behulp van een 2,5 mm inbussleutel. Sluit de hendel om de spanning nogmaals te controleren. Herhaal totdat de spanning voldoende is en sluit vervolgens de hendel in de gewenste positie.

Para aumentar a tensão na alavanca, abra a alavanca e posicione-a no entalhe. Use uma chave sextavada de 2,5 mm para rodar o afinador de tensão no sentido dos ponteiros do relógio um clique. Feche a alavanca para voltar a verificar a tensão. Repita até que a tensão seja suficiente, e depois feche a alavanca na posição desejada.

レバーのテンションを上げるには、レバーを開いてノッチ内に位置させます。2.5 mm のヘクサレンチを使用して、テンション調節器を右へ 1 クリック回します。レバーを閉じて、テンションをチェックします。テンションが十分になるまでこの作業を繰り返し、その後レバーを最適な位置で閉じます。

要增加张力，请打开快脱杆，然后将其定位在槽口中。用 2.5 mm 六角扳手将张力调节螺母朝顺时针方向转动一格。合拢快脱杆以再次检查张力。重复操作直至充分张紧，然后在想要的位置合拢快脱杆。

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"We will revolutionize the relationship that our users have with SRAM products, cultivating a bond between the rider and bicycle. Our technical communication will be delivered in innovative and exciting ways, with deliberation and accuracy that inspires loyalty and trust across the globe."

-SRAM TechCom Vision Statement

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Disc Brake Caliper Mounting Bracket and Spacer Configuration

Use the charts below to identify the parts you intend to use, then reference the charts on the reverse side to determine the bracket and/or spacer configuration to mount your disc brake caliper to your frame/fork. Consult your retailer for the proper rotor sizes for your bicycle.

Road and Mountain configurations

Mountain configuration only

Fork and Frame Mount

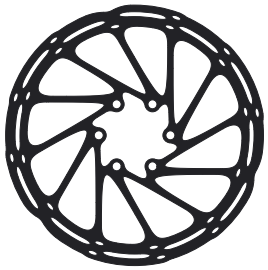
The fork and frame mounting specification is determined by the fork/frame manufacturer, and is not a reference to the rotor size. Consult your manufacturer for the proper mounting specification for your fork/frame.

Fork	Frame
140 Post	140 IS
160 IS	140 Post
160 Post	160 Post
200 Post	180 Post
203 Post	

Rotor Size

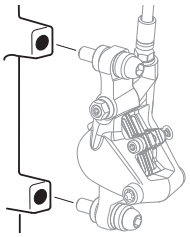
Determine your desired rotor size ensuring it is compatible with your fork/frame.

140 mm
160 mm
170 mm
180 mm
185 mm
200 mm
203 mm



Post Mount

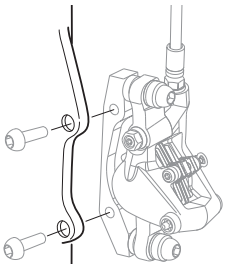
Direct Mount (Direct)	Post Spacers (S)	Post Brackets (P)
No post brackets or spacers are needed to attach the caliper to the frame or fork.	Some rotor sizes require the use of spacers to fit the caliper on the frame or fork.	Some rotor sizes require the use of post brackets to fit the caliper on the frame or fork.



International Standard Mount (IS)

International Standard Bracket (IS)

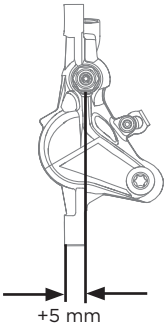
SRAM brakes are Post Mount. To convert an IS frame or fork to Post Mount, an IS bracket is required.



Standard

Offset tabs

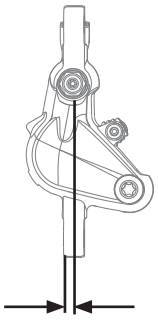
No CPS washers are needed between the caliper and mount (unless otherwise specified).



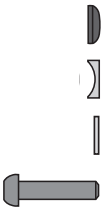
CPS

Inline tabs

CPS washers are needed between the caliper and mount (unless otherwise specified).



Mounting Hardware



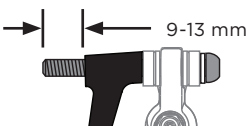
Convex washer

Concave washer

Washer

Upper and lower bolts

⚠WARNING - CRASH HAZARD



There must be 9-13 mm of mounting bolt thread engagement when mounting brake calipers to forks and frames either with or without brackets and/or spacers. Riding a bike with improper bolt engagement can allow the brakes to disengage from the bicycle, which can lead to a crash and serious injury or death to the rider.

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Disc Brake Caliper Mounting Bracket and Spacer Configuration

Use the chart to determine the bracket and/or spacer configuration to mount your disc brake caliper to your frame/fork.

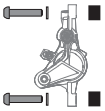
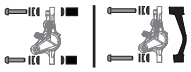
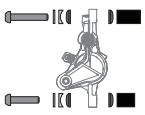
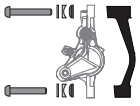
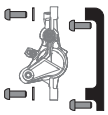
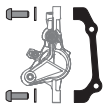
Road and Mountain configurations

Mountain configuration only

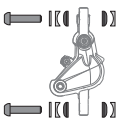
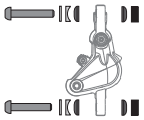
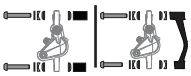
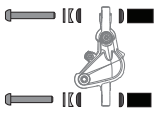
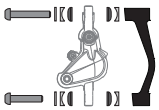
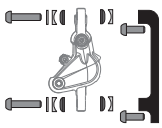
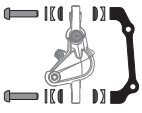
Rotor Size (mm)

Fork/Frame Mount	140 mm	160 mm	170 mm	180 mm	185 mm	200 mm	203 mm
140 IS	0 IS	20 IS	30 IS	40 IS	45 IS	60 IS	
140 Post	0 Direct	20 S 20 P*	30 P	40 P			
160 IS		0 IS		20 IS	25 IS	40 IS	
160 Post		Direct	10 S	20 S 20 P*	25 S	40 P	
180 Post				Direct		20 S 20 P*	
200 Post						Direct	
203 Post							Direct

Standard

	Upper Bolt	Upper Spacer	Lower Bolt	Lower Spacer
	Direct			
	16.8 mm	N/A	16.8 mm	N/A
	Direct Post Mount			
	**10 S**			
	24 mm	6 mm	24 mm	6 mm
	10 Post Spacer			
	**20 S / 20 P***			
	37.5 mm	12.5 mm 20 P: N/A	32 mm	7.5 mm 20 P: N/A
	20 Post Spacer / 20 Post Bracket			
	**25 S**			
	43 mm	17.5 mm	37.5 mm	10 mm
	25 Post Spacer			
	**30 P**			
	46 mm	N/A	37.5 mm	N/A
	30 Post Bracket			
	**40 P**			
	16.8 mm	N/A	16.8 mm	N/A
	40 Post Bracket			
	**IS**			
	16.8 mm	N/A	16.8 mm	N/A
	IS (0 IS, 20 IS, 25 IS, 30 IS, 40 IS, 45 IS, 60 IS)			

CPS

	Upper Bolt	Upper Spacer	Lower Bolt	Lower Spacer
	**Direct**			
	29 mm	N/A	29 mm	N/A
	Direct Post Mount			
	**10 S**			
	37.5 mm	12.5 mm	32 mm	7.5 mm
	10 Post Spacer			
	**20 S / 20 P***			
	43 mm	17.5 mm 20 P: N/A	37.5 mm	12.5 mm 20 P: N/A
	20 Post Spacer / 20 Post Bracket			
	**25 S**			
	46 mm	20.5 mm	40.5 mm	15 mm
	25 Post Spacer			
	**30 P**			
	50 mm	N/A	43 mm	N/A
	30 Post Bracket			
	**40 P**			
	29 mm	N/A	29 mm	N/A
	40 Post Bracket			
	**IS**			
	29 mm	N/A	29 mm	N/A
	IS (0 IS, 20 IS, 25 IS, 30 IS, 40 IS, 45 IS, 60 IS)			

*20 P is only available on products from the Original Equipment bicycle Manufacturer (OEM)

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RITCHEY User Manual

Saddles and seat posts

Important information about use, care, maintenance and installation

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Some notes on this user manual

Pay particular attention to the following symbols:

This symbol means that your life or health may be in danger unless you comply with provided instructions or carry out prescribed measures.

This symbol warns you about actions that could lead to damage of property or the environment.

This symbol indicates there is special information on how to handle the product and may refer you to a specific passage in this manual requiring your special attention.

The possible consequences described above are not repeated every time one of the symbols appears!

Introduction

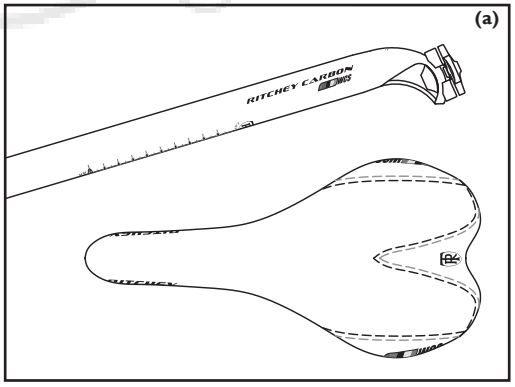
Congratulations on your purchase of a RITCHEY component, you have made an excellent choice. At RITCHEY we develop, test and manufacture our products with dedication, and strive to uphold the highest standards of quality. Like all high quality sports equipment, RITCHEY components require careful installation in order to function properly and provide long-term dependability. We recommend that you seek the assistance of a qualified mechanic at your local authorized RITCHEY retail shop. We also recommend using all RITCHEY components to ensure optimal performance and durability. Our precise tolerances are intended to ensure component compatibility, and are carefully monitored during production and quality control so that installation will be easy and trouble-free.

This manual contains important notes about use, care, maintenance and installation.

Please read this manual in its entirety, beginning with the general information. Then you can carefully review individual chapters specific to each component you have purchased or intend to use. Doing so will help ensure smooth installation and trouble-free use of the product.

Retain this user manual for your records and future reference. If you sell or loan your component or bike, provide this manual to the new user.

With RITCHEY components, as is the case with all lightweight bicycle products, special care and attention are required for proper installation and use. Materials used by RITCHEY in the manufacture of its components are extremely strong and durable, yet low in weight, making them perfect for high-performance bike riding. It is important to note, however, that all materials, no matter how strong at the outset, are susceptible to wear, tear and fatigue over time, potentially becoming brittle due to extensive exposure to vibrations or impacts. In the event of a crash, significant impact, or undue stress of any kind, the component may not show obvious or visible signs of damage. However, since the material may have sustained undetectable external or internal damage, it is very dangerous to continue using a component after undue stress or a significant impact, because the component could eventually fail as a result, with unforeseeable consequences to your health or well being. After any such occurrence, consult your local RITCHEY dealer to get a professional examination and evaluation of the product.



Before your first ride – determined use

Most RITCHEY seat posts and saddles **(a)** are designed for use on road, triathlon (i.e. "time trial"), cyclocross or mountain bikes under normal riding and race conditions.

They are not built for freeriding, dual slalom, boarder cross / downhill, jumps and comparable use.

Never modify or change your seat post or saddle. Do not file or drill holes in RITCHEY components, especially those with carbon parts, as it will void your warranty and could compromise their structural integrity.

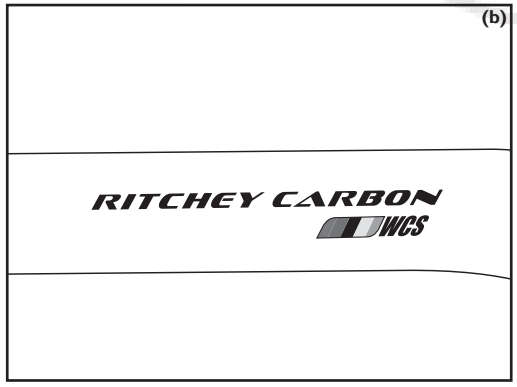
We strongly recommend using all RITCHEY parts in order to achieve optimal function and component durability. If you intend to combine RITCHEY parts with those from other manufacturers, ensure that all dimensions correspond exactly with those listed in this manual, and consult the other manufacturers' user manuals regarding their specifications and restrictions!

The saddles and seat posts are designed to carry a maximum rider's weight of 110 kilos (242 lbs)– luggage, eg backpack, included.

If you have any questions or concerns, contact your local RITCHEY retailer.

After a crash, accident or other major impact, replace the saddle and seat post for your own safety.

If your seat post or saddle makes any "creaking," "crackling" or "cracking" noises, or if there is visible damage, such as notches, tears, dents, discolorations, etc., do not use the bicycle until you have consulted your local RITCHEY dealer, who can check the part carefully and advise whether replacement is necessary.



Special characteristics of carbon

As is the case with all RITCHEY products made from carbon composites, **(b)** special care and attention is required.

Carbon is an extremely strong material which combines high resistance with low weight. Please note that carbon, unlike metals, may show no visible deformation after overstress even though sub-structures may be broken. This makes it very dangerous to continue using a carbon part after an impact or undue stress, because it can lead to an accident with serious and unforeseeable consequences.

If your RITCHEY carbon part has sustained this kind of impact or undue stress, we strongly recommend you take your complete bicycle to a local RITCHEY dealer for inspection, so you will know whether replacement is necessary. If there are any unanswered questions or doubts, the dealer can contact RITCHEY or one of our distributors directly.

RITCHEY components made of carbon must never be repaired; they must be discarded and replaced. Make absolutely sure that any damaged part is never re-used; it should be destroyed to ensure that re-use is impossible.

Parts made from carbon should never be subjected to excessive heat under any circumstances. Therefore, never paint a carbon component and attempt to cure it by heat. Temperatures required for the application of enamel or powder-coat paints will cause the carbon fibres to separate. Do not leave carbon components in a car left in the sun, or in direct sunlight for prolonged periods, and do not leave carbon components near sources of heat.

Components made of carbon have, like all lightweight bicycle parts, a limited service life. To be safe, RITCHEY recommends changing stems and handlebars, depending on usage, at intervals of three years, even if they were not involved in an accident or did not sustain a comparable impact.

Make sure all carbon clamping areas are absolutely free of grease and other lubricants. Grease will penetrate the surface of the carbon material, reducing the coefficient of friction and hence impairing the hold and undermining the stability of joined parts. Greased carbon may never again provide a safe clamping surface. If you install carbon parts, use RITCHEY Liquid Torque to achieve optimum friction where parts connect. This will allow you to tighten bolts to prescribed torque limits, execute proper installation and attain reliable, slip-free hold.

If any dents, deformations, scratches, gouges or discolorations are visible on your carbon component, or if it makes "creaking" or "crackling" noises, do not use the bicycle until the part has been replaced! After undue stress, a crash or other major impact, replace the part or have it inspected by your local RITCHEY dealer before using.

Cleaning and care

Clean your seat post and saddle with water and a soft cloth. If necessary, use a non abrasive soap to remove grime. Only use gasoline based solvents for cleaning tough stains like oil or grease from hard surfaces. Do not use degreasing agents, which contain organic solvents (i.e. acetone, trichloroethylene, methylene, etc.). Chemicals of this sort may damage the finish or substructure of the material.

After drying your bike you can apply a wax based polish **(a)** to painted, carbon and metal surfaces. After the wax has dried, polish the parts. With this treatment your seat post will keep its nice finish for years.

Saddles with a leather cover

Maintain leather surfaces by applying specialized creams or conditioning liquids every six months, or after each ride in rain, as well as in muddy or sandy conditions.

After the leather cream or liquid has soaked in, rub it in, then buff off any excess cream **(b)** to prevent the saddle surface from becoming slippery.

Saddles with an artificial leather cover

Maintain the surface of artificial leather at least every six months or after rainy, muddy or sandy rides with a silicone-based liquid or spray.

After applying the silicone-based liquid or spray, rub it in, then buff off any excess spray to prevent the saddle surface from becoming slippery.

While cleaning, look for cracks, scratches, dents, as well as bent or discoloured material. If you think there may be a problem, see your local RITCHEY dealer. Have damaged or defective components replaced immediately.

Maintenance

Check all bolts after the first 200-400 kilometres (120-240 miles) and adjust as needed, keeping within the prescribed torque limits. Check every 2,000 kilometres (1,200 miles) thereafter.

General notes on installation

Seat post installation and saddle installation are jobs for a qualified mechanic. For your own safety, have your local RITCHEY dealer perform the installation and maintenance jobs outlined in this manual. Each of the following instructions must be followed with exactness. Failure to observe these guidelines can cause a component to fail, resulting in a crash or injury.

Installation of parts with differing tolerances can cause problems due to incompatibility or poor fit, and can lead to component failure, as well as accident or injury.

We recommend using a RITCHEY seat post with a RITCHEY saddle and vice versa, because they are designed to fit and function as an integrated whole. If you choose to use a part from another manufacturer, consult their product documentation regarding clamp sizing to ensure proper fit and usability with a RITCHEY component.

RITCHEY assumes no responsibility for problems resulting from a RITCHEY component being used with a part from another manufacturer.

Watch out for burrs and sharp edges inside the bike frame's seat tube, on the frame's seat clamp and on the seat post's saddle clamp; do not install the seat post or saddle if you identify burrs or sharp edges. If there are burrs or sharp edges on your frame, or on a RITCHEY or a non-RITCHEY component, have your local RITCHEY dealer examine the problem in order to see whether the issue can be remedied and how.

Once it is determined that a component is damaged, it should not be used under any circumstances. Stop using the bicycle until the part has been replaced! If there is any doubt, we recommend replacing the part.

The bolts of the RITCHEY seat post have bolt retaining compound at the thread. Do not grease the threads for this reason!

RITCHEY Liquid Torque

Installing components with RITCHEY Liquid Torque

Carbon fibre components are particularly vulnerable to damage caused by excessive clamping force. RITCHEY Liquid Torque **(c)** creates extra friction between two surfaces, allowing tightening torque to be reduced by up to 30%.

This is especially useful in clamping areas, such as between a handlebar and stem, or fork steerer tube and stem, or bar ends and handlebars – three areas where too much clamping force can damage either component, causing component failure or voiding the warranty. By reducing clamping force, RITCHEY Liquid Torque relieves stress on sensitive carbon surfaces, preventing damage to fibres or the cracking of the carbon sub-structure. It also retains its effectiveness in wet conditions and provides maximum protection against corrosion.

RITCHEY Liquid Torque can be used for all carbon, aluminium and steel connections, including:

- Seat post/frame interface area and seat post bolt threads
- Stem/handlebar interface area and stem bolts
- Stem/fork interface area and bolt threads
- Bolt threads in any area where reliable clamp force is required, but where loosening with the appropriate tool should be easy, even after prolonged use. RITCHEY Liquid Torque is ideally suited because it does not harden.

Directions for use: Prior to applying Liquid Torque, remove dirt particles and lubricant residues from the surfaces to be treated. Next, apply a thin and even coat of RITCHEY Liquid Torque to the cleaned surfaces using a brush, lint free textile or chamois/artificial chamois. Install components as directed by the manufacturer, using a torque wrench (such as the RITCHEY Torqkey, recommended for use with all RITCHEY handlebars and stems), taking care not to exceed the manufacturer's maximum torque recommendations. After tightening to specified torque, wipe off any excess Liquid Torque.

Re-seal RITCHEY Liquid Torque container after use.

Additional information: Many manufacturer warranties will not cover damage to component due to over-tightening.

Refer to manufacturer's recommended torque limits for each component. Always use a torque wrench to verify you are within specified torque limits, and do not exceed them. Using RITCHEY Liquid Torque will allow you to safely install your bicycle components – particularly in the case of carbon fibre – without exceeding the manufacturer's specified torque limits. In most cases, using Liquid Torque will enable you to use as much as 30% less torque while installing your components.

RITCHEY Liquid Torque is neutral to copper and aluminium alloys, steel and synthetic material, and will not damage product surfaces.

Using the RITCHEY Torque Wrench

To achieve long lasting and problem free clamping of parts, RITCHEY considers the use of a torque wrench **(d)** absolutely necessary.

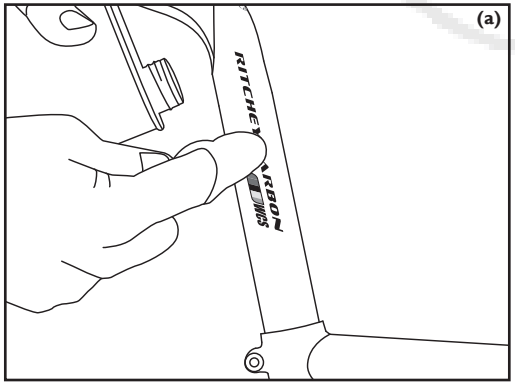
If the maximum torque given by RITCHEY does not generate sufficient clamping force, apply RITCHEY Liquid Torque to interconnecting surfaces to increase friction.

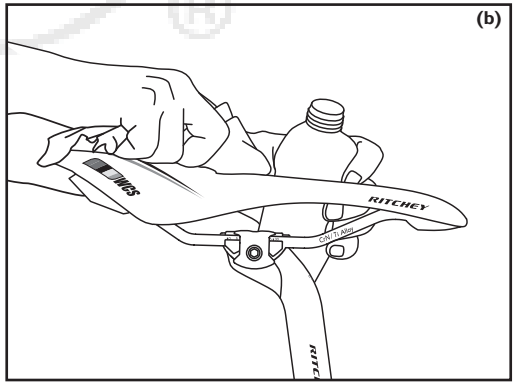
Exceeding recommended torque (generally indicated somewhere on the clamp assembly) on RITCHEY seat post bolts will create too much clamping force, running the risk of component failure and the voiding the warranty.

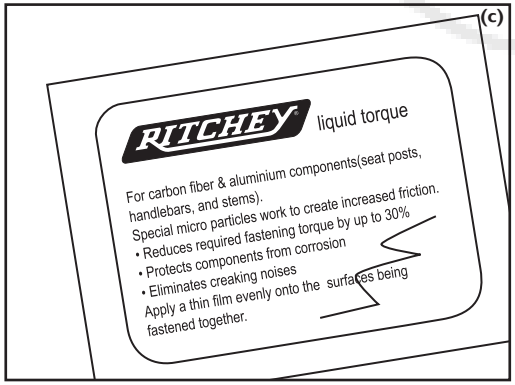
Loose or overly tightened bolts can lead to failure and therefore to an accident. Adhere to torque specifications carefully. If you do not have access to a high-quality torque wrench, see your local RITCHEY dealer.

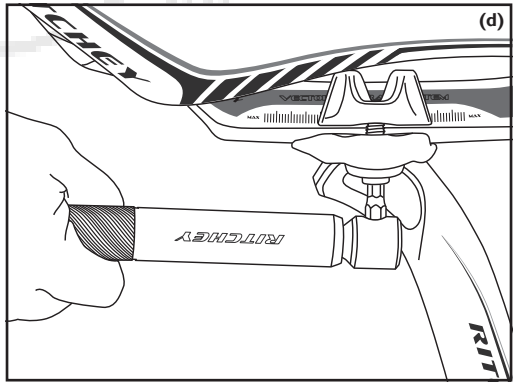
The RITCHEY Torque Wrench is suitable for torque settings from 2 Nm (e.g. for small aluminum bolts) to 16 Nm (e.g. for M6 bolts at some seat posts).

For detailed information about RITCHEY Torque Wrench, visit the online shop of RITCHEY International at www.ritchey.ch.






(c)
RITCHEY
liquid torque
For carbon fiber & aluminium components(seat posts, handlebars, and stems).
Special micro particles work to create increased friction.
• Reduces required fastening torque by up to 30%
• Protects components from corrosion
• Eliminates creaking noises
Apply a thin film evenly onto the surfaces being fastened together.



Installing the seat post

Make sure the seat post matches the inside diameter of the seat tube of the frame.

Measure seat post **(a)** and seat tube **(b)** of the frame. The difference between the (bigger) inside diameter of the seat tube and the (smaller) outside diameter of the seat post should be between 0.05 and 0.1 mm.

Before the seat post is inserted into the seat tube, make sure that the seat tube is absolutely free of sharp edges or burrs **(c)**. If you will be inserting a carbon model RITCHEY seat post, make sure the inside of the seat tube is totally degreased! A qualified mechanic can remove seat tube burrs and smooth as necessary.

If the diameter fits and there are not any burrs, insert the seat post slowly and carefully into the seat tube. Avoid inserting the seat post further than necessary so as to avoid marring the finish along what will be the visible portion of the seat post shaft.

The seat post must fit snugly into the frame, without the need to push or twist.

Conversely, the seat post should not have play and should not tilt inside the seat tube.

Incorrect mating of the seat post and seat tube can cause seat post failure, resulting in a crash and potential injury to the rider.

Tighten the binder bolt or quick-release mechanism of the seat post clamp (read the section below, **"How to use quick-releases at seat post clamps"**), so that the seat post does not slip when you install saddle as described further on.

General information on RITCHEY Link seat posts

The seat posts of the RITCHEY Link system offer the advantage that you can install three different saddle systems. For example, if you buy a new saddle later, you only need to replace the clamping parts of the seat post head and you can then immediately use a saddle with the RITCHEY Vector Evo, with a conventional tubular or wire rail or with a Monorail from Selle Italia.

Note the following tips concerning installation and adjustment.

Installation of the RITCHEY Mast Topper seat post

The installation of the Mast Topper **(see also p. 14)** fundamentally resembles that of a normal seat post. The big difference is that the Mast Topper seat post must be pushed over the lengthened seat tube of the frame. The remaining information on diameter tolerances, an absence of grease, etc. remain the same.

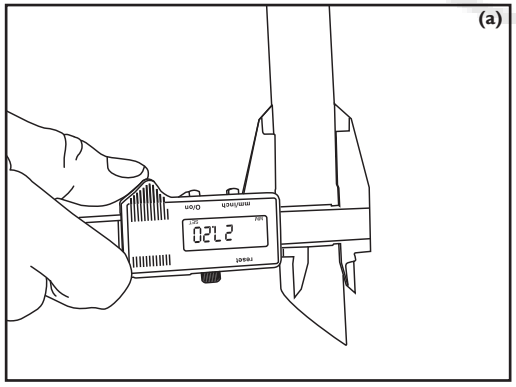
However, the seat tube of the frame must be sawn off to set the seated height of the rider. This is work that you should definitely leave to your RITCHEY dealer.

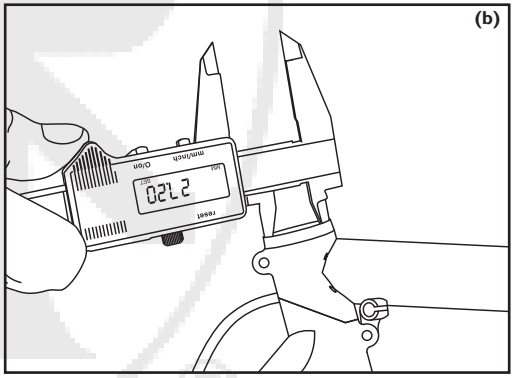
Follow exactly the instructions of the frame maker and obtain help from an authorised and experienced mechanic. RITCHEY will assume no liability whatsoever for seat tubes that have been shortened to an incorrect length or damaged due to incorrect installation of the Mast Topper seat post.

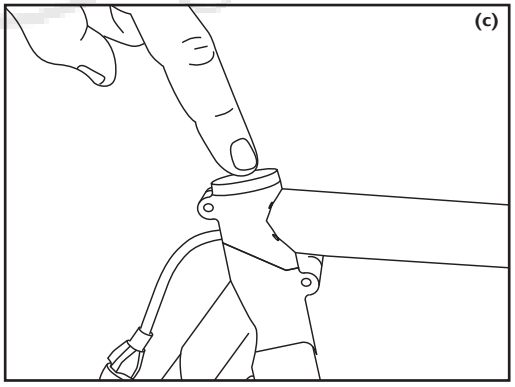
Installing a saddle bag

While choosing and installing a saddle bag, be sure it fits securely to the saddle rails; some models also connect to the seat post. Once installed, a saddle bag should not swing when the bike is being ridden. A swinging bag can mar the finish of the saddle or seat post, as well as distract or disturb the rider, which could prove dangerous.

Ask your RITCHEY dealer for help in selecting a well fitting model.







Installing the saddle

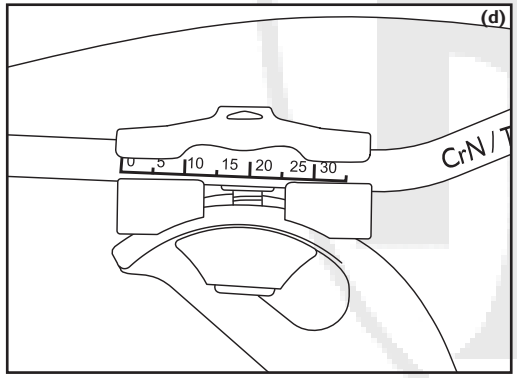
Two bolt system

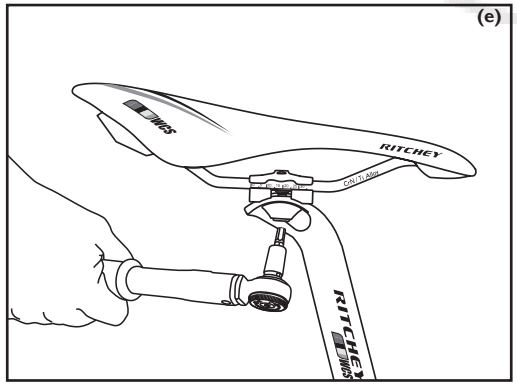
The RITCHEY two bolt seat post is designed to suit most performance bicycle saddles with round 7 mm diameter rails – including all RITCHEY saddles – as well as with ovalized rails within 7 mm width x 9 mm height dimensions.

To install the saddle, unscrew both fixing bolts 4 to 5 turns. It is often not necessary to take the mechanism completely apart. If the width of the saddle rails does not fit exactly into the clamp grooves, do not try to force them in! This can cause the clamping mechanism or the saddle rails to break, resulting in a crash and potential injury to the rider. Use a different saddle model or consult your RITCHEY dealer for help.

If the saddle rails fit into the seat post clamp grooves, slide the saddle so that the clamp is positioned midway along the rails' total length **(d)**. Then position the saddle so that its upper surface is parallel to the ground. Turn the bolts alternately in small increments so that the seat post clamp gradually and evenly tightens around each rail.

Once there is uniform hold on both rails, tighten the bolts alternately and gradually with a torque wrench **(e)** until each reaches maximum specified torque, listed on the seat post in newton-meters (Nm).





Single bolt system

The RITCHEY single bolt seat post standard clamp is designed to interface with most performance bicycle saddles featuring round 7 mm diameter rails, including all RITCHEY saddles. Replacement outer clamps are also available to accommodate ovalized rails of 8 mm height x 8.5 mm width, as well as carbon saddle rails beyond the 8 x 8.5 mm dimensions. Contact your RITCHEY dealer if you are uncertain what type of rails your saddle has or if you require more information.

To install the saddle, unscrew **(f)** the fixing bolt as far as possible without loosening from the lock nut on the other side of the clamp assembly. It is generally not necessary to take the mechanism completely apart if it is already equipped with the correct outer clamps for your saddle.

If you do find it necessary to unscrew the single fixing bolt completely, proceed to remove it from assembly. This will free up outer clamp pieces. Inner clamp pieces are held in position with rubber retention plate (leave in place). Install saddle rails into inner clamp pieces, add outer pieces and re-insert fixing bolt.

If the width of the saddle rails does not fit exactly into the clamp grooves, do not try to force them in! This can cause the clamping mechanism or the saddle rails to break, resulting in a crash and potential injury to the rider. Use a different model saddle or consult your RITCHEY dealer for help.

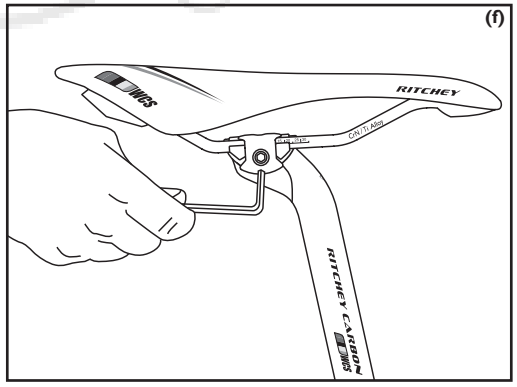
If the saddle rails fit into the seat post clamp grooves, slide the saddle so that the clamp is positioned midway along the rails' total length.

Then position the saddle so that its upper surface is parallel to the ground. Turn the bolt gradually and ensure that

1) the clamp assembly is still properly mounted on the carbon fiber seat post head and

2) that the clamp is tightening evenly around each rail.

Once there is uniform hold on both rails, tighten the bolt gradually with a torque wrench until you've reached specified maximum torque, which is listed on the seat post in newton-meters (Nm).



RITCHEY Link system with clamps for RITCHEY Vector Evo rails

The Vector Evo saddle does not have a saddle rail with two parallel wires or tubes, as is usual, but instead it has a carbon rail in an open V-shape pointing downwards that is centred under the saddle pad.

In addition to a high degree of comfort the RITCHEY Vector Evo rail makes it possible to provide an extensive horizontal adjustment range for the saddle.

The Vector Evo rail requires a special seat post head **(a)** that the saddle is installed into.

For installation, undo the two fixing bolts and remove the entire mechanism.

Place the lower Vector Evo rail holder on the RITCHEY Link seat post so that the longer area points to the rear. Then place the RITCHEY saddle on it.

Position the upper holder above the rail.

Guide the first bolt from underneath with the clamping segment into the rail holder **(b)**. Take care that the rounded part points outwards and that the bolt head fits into the countersunk recess of the clamping segment.

Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

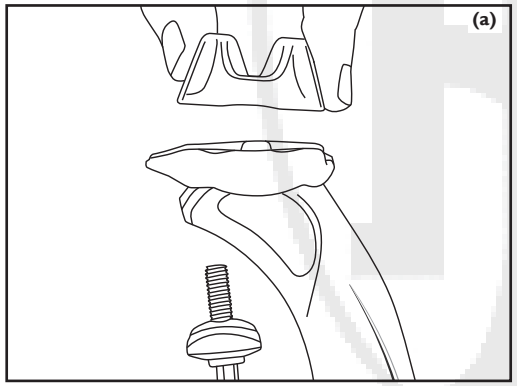
Guide the second bolt from underneath with the clamping segment into the holder **(c)**. Take care that the rounded part points outwards and that the bolt head fits into the countersunk recess of the clamping segment.

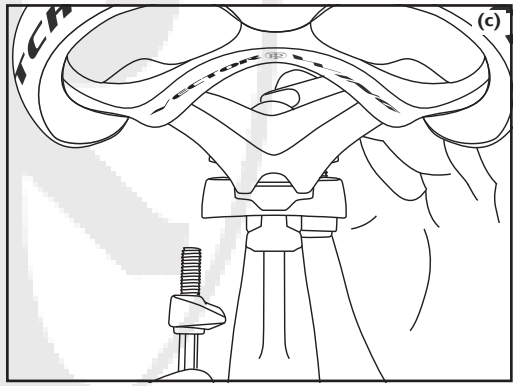
Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

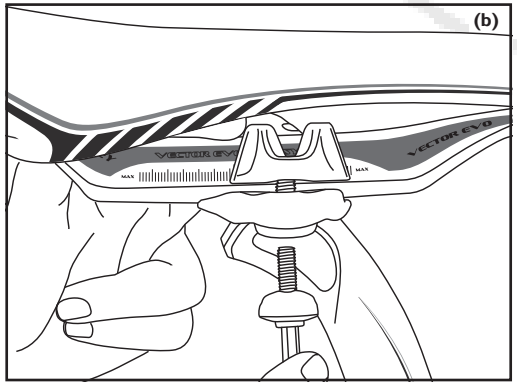
If the parts match with one another, push the RITCHEY saddle onto the post so that the Vector Evo rail is clamped more or less in the middle by the fastening mechanism of the post. In addition, align the upper edge of the saddle parallel to the ground.

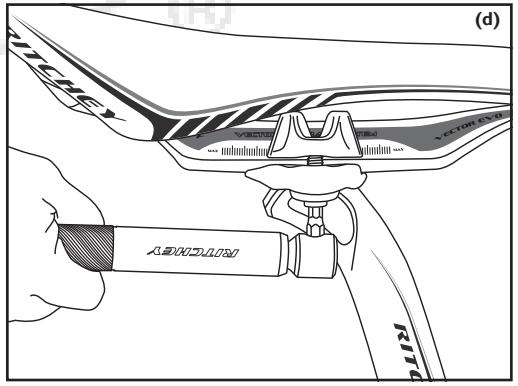
Tighten up the two bolts alternately and in steps until the rail is cleanly held.

If everything fits properly, tighten up the two bolts alternately and in steps using a torque wrench until the torque wrench releases (or clicks) briefly at the maximum value in Newton metres (Nm) specified on the clamping part **(d)**.









RITCHEY Link system with clamps for conventional saddle rails

Most sport saddles have a rail diameter for the saddle of 7 mm, and that includes many RITCHEY saddles. A number of saddles have a slightly oval saddle rail tube (width 7 mm and height 9 mm).

For installation, undo the two fixing bolts and remove the entire mechanism.

Place the lower rail holder on the RITCHEY Link seat post so that the longer area points to the rear. Then place the saddle on it.

Position the upper holder **(e)** above the rail.

Guide the first bolt from underneath with the clamping segment into the holder **(f)**. Take care that the rounded part points outwards and that the bolt head fits into the countersunk recess of the clamping segment.

Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

Guide the second bolt from underneath with the clamping segment into the holder **(g).** Take care that the rounded part points outwards and that the bolt head fits into the countersunk recess of the clamping segment.

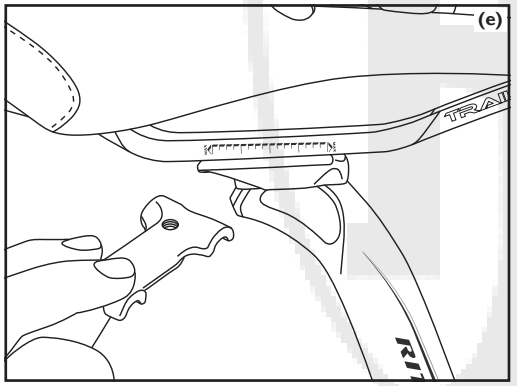
Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

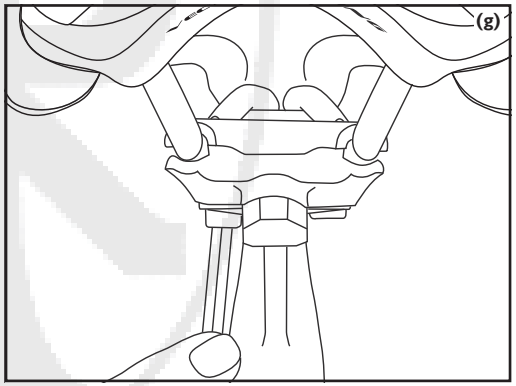
If the saddle rails are too far apart, do not attempt to push them into the clamping grooves using force. The clamping mechanism or the saddle rail could break and cause an accident and/or an injury to the rider as a result. Use a different model off saddle or else ask your RITCHEY dealer instead.

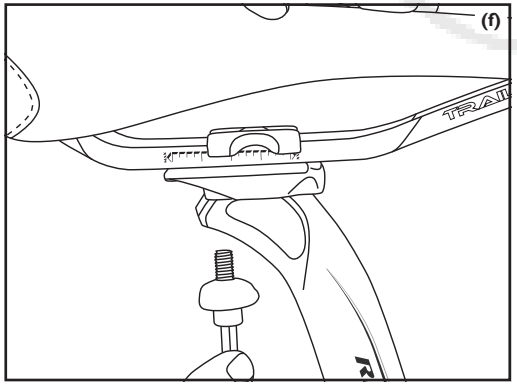
If the saddle fits, push it onto the post so that the rail is clamped more or less in the middle by the fastening mechanism of the post. In addition, align the upper edge of the saddle parallel to the ground.

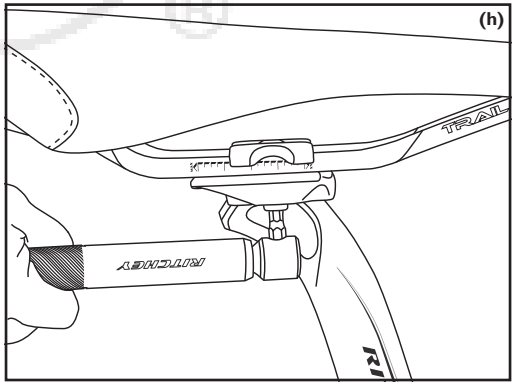
Tighten up the two bolts alternately and in steps until the rail is cleanly held by the two holders.

If everything fits properly, tighten up the bolts alternately and in steps using a torque wrench until the torque wrench releases (or clicks) briefly at the maximum value in Newton metres (Nm) specified on the clamping part **(h)**.









RITCHEY Link system with clamps for Selle Italia Monorail rails

The Selle Italia Monorail saddle does not have a saddle rail with two parallel wires or tubes, as is usual, but instead it has a carbon structure that is centred under the saddle pad and has two carbon rails above one another. In addition to being more comfortable than conventional saddles, the special rail also allows a greater amount of horizontal adjustment for the saddle.

The Selle Italia Monorail rail requires a special seat post head that the saddle is installed into.

For installation, undo the three fixing bolts and remove the entire mechanism.

Guide the left-hand Monorail rail holder at the RITCHEY Link seat post in such a way that the lower channel fits into the Link seat post head.

Guide the saddle rail into the two upper channels of the Monorail holder **(a)**.

Position the second holder from the right at the rail and post.

Guide from the right the first bolt into one of the lower holes of the rail holder **(b)**.

Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

Guide the second bolt likewise from the right into the second of the lower holes of the rail holder. Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

Guide the third bolt likewise from the right into the upper hole of the rail holder.

Tighten up the bolt by two to three turns. This must be possible without applying any force at all, otherwise something is wrong. If necessary, undo the bolt and start again.

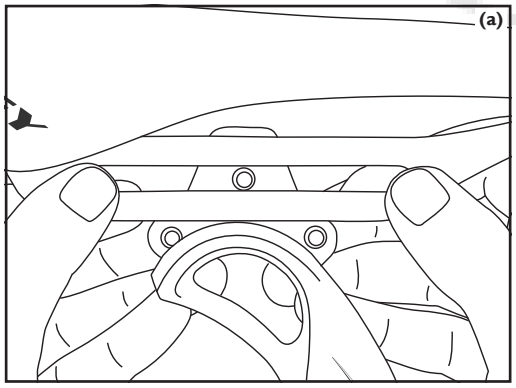
If the parts match with one another **(c)**, push the Monorail saddle onto the post so that the rail is clamped more or less in the middle by the fastening mechanism of the post. In addition, align the upper edge of the saddle parallel to the ground.

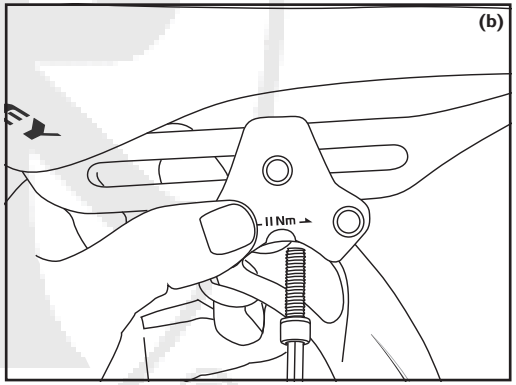
Tighten up the two lower bolts alternately and in steps until the rail is cleanly held.

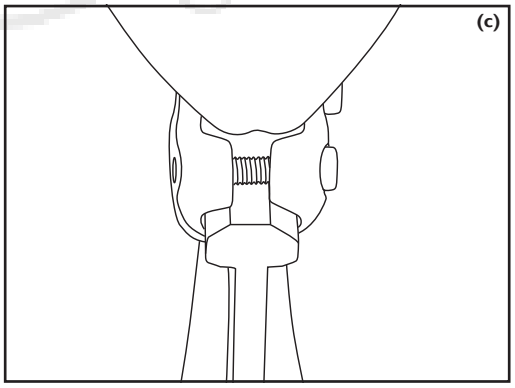
If everything fits properly, tighten up the two lower bolts alternately and in steps using a torque wrench until the torque wrench releases (or clicks) briefly at the maximum value in Newton metres (Nm) specified on the clamping part **(d)**.

Then tighten up the upper bolt using a torque wrench until the torque wrench releases (or clicks) briefly at 3 Nm less than the maximum torque in Nm specified on the clamping parts.

If the Monorail system does not clamp the saddle properly at the maximum tightening torque that is permitted, then the problem is likely to be the tolerances in the rail. In such a case bring the saddle to your RITCHEY dealer for checking and exchange it if necessary for a model that fits precisely.







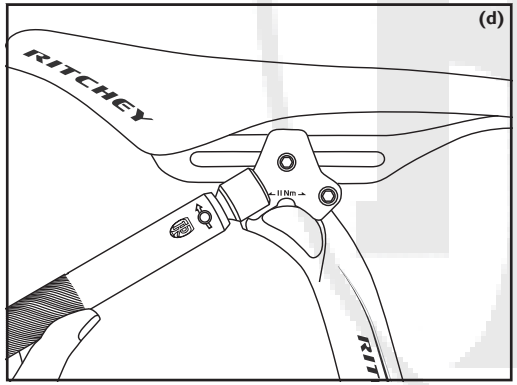
Fore-aft position and tilt of saddle

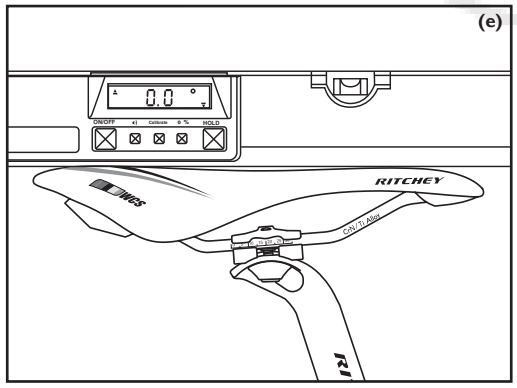
The inclination of your upper body, and hence your riding comfort and pedalling power, are partially influenced by the distance between the handlebars and the saddle. This distance can be altered slightly by changing the position of the saddle rails in the seat post clamp. Be aware, however, that this also influences your position relative to the cranks and may affect your pedalling motion. Depending on whether the saddle is positioned more forward or more backward in the seat clamp, your legs will extend farther or not as far forward.

The top of your saddle must be close to horizontal **(e)** in order to pedal in a relaxed manner. If it is tilted forward, you will need to apply additional pressure on the handlebars to prevent yourself from slipping forward on the saddle. When riding off-road, especially on a full-suspension bike, your position may vary. That means the nose of the saddle may point slightly upward or downward. For best results and to ensure your comfort and safety, seek assistance from a local RITCHEY dealer.

A saddle's range of adjustment is very small. Replacing the stem allows you to make bigger changes to your position, because stems come in differing lengths. In doing so you may achieve differences of more than ten centimetres. Changing your stem may require changes in shifter and break cable lengths – a job best left to your RITCHEY dealer!

Make sure the seat post clamp assembly is not positioned too close to the bends in the rails at either end of the rails' flat mounting section **(f)**.





Adjusting saddle position and tilt

One- and two-bolt system

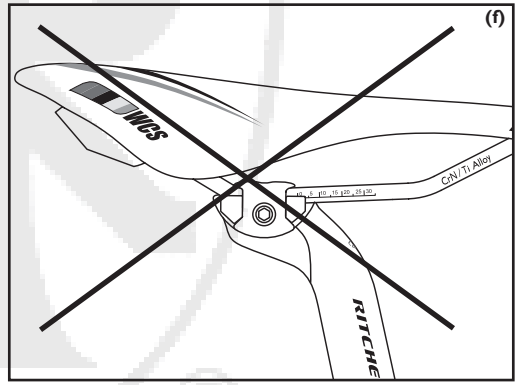
RITCHEY seat post clamp designs consist of one or two bolt clamping assemblies used to adjust the horizontal orientation and tilt of the saddle.

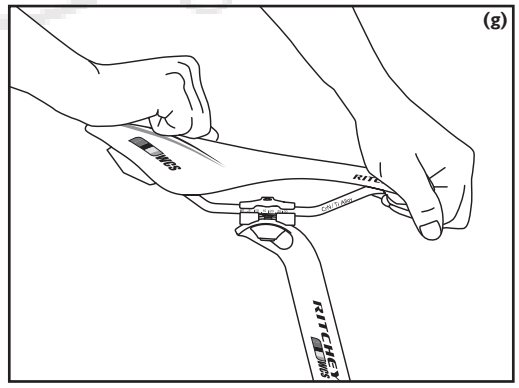
Loosen seat clamp bolt(s) at the top of the seat post. Turn the bolt(s) counterclockwise no more than two to three turns to begin with, otherwise the whole assembly can come apart.

Move the saddle forward or backward by sliding its rails in the loosened seat post clamp. To adjust tilt, put one hand on the front of the saddle and one on the back and carefully rotate the saddle in either direction. You may need to give the saddle a light tap initially to get it to move in the assembly.

Make sure the top surface of the saddle remains horizontal as you tighten the bolt(s). Ensuring that the bike is on level ground will make it easier to determine proper position.

Retighten the bolt(s) with a torque wrench according to the torque specified on the seat post's clamp assembly. After tightening bolt(s) to proper torque, check to see whether the saddle can still be moved or tilted by putting one hand on the back of the saddle and one on the front, then alternately applying pressure, first to the front and then to the back **(g)**.





Link – Vector Evo

If you are not satisfied with the saddle position, then you can vary it. Loosen the two bolts at the post head by 2 to 3 turns. Now you can shift the saddle backwards and forwards and adjust the angle (e.g. the front of the saddle somewhat lower).

Pay attention to the stop markings on the saddle rail and never go beyond them **(a)**.

The lower holder can be installed in two directions. If you have pushed the saddle fully to the rear, we recommend that you align the longer area of the holder to face to the rear **(b)**. If you have pushed the saddle fully to the front, we recommend that you align the longer area of the holder to face to the front **(c)**. This places less stress on the rail.

Tighten up the two bolts alternately and in steps until the rail is cleanly held by the two holders.

If everything fits properly, tighten up the bolts alternately and in steps using a torque wrench until the torque wrench releases (or clicks) briefly at the maximum value in Newton metres (Nm) specified on the clamping part.

Link – conventional saddle rails

If you are not satisfied with the saddle position, then you can vary it. Loosen the two bolts at the post head by 2 to 3 turns. Now you can shift the saddle backwards and forwards and adjust the angle (e.g. the front of the saddle somewhat lower).

Pay attention to the stop markings on the saddle rail and never go beyond them **(d+e)**.

The lower holder can be installed in two directions. If you have pushed the saddle fully to the rear, we recommend that you align the longer area of the holder to face to the rear **(f)**. If you have pushed the saddle fully to the front, we recommend that you align the longer area of the holder to face to the front **(g)**. This places less stress on the rail.

Tighten up the two bolts alternately and in steps until the rail is cleanly held by the two holders.

If everything fits properly, tighten up the bolts alternately and in steps using a torque wrench until the torque wrench releases (or clicks) briefly at the maximum value in Newton metres (Nm) specified on the clamping part **(h)**.

Link – Monorail

If you are not satisfied with the saddle position, then you can vary it. Loosen the two bolts at the post head by 2 to 3 turns. Now you can shift the saddle backwards and forwards and adjust the angle (e.g. the front of the saddle somewhat lower).

Pay attention to the stop markings on the saddle rail and never go beyond them **(i+k)**.

Tighten up the two lower bolts alternately and in steps until the rail is cleanly held by the two holders.

If everything fits properly, tighten up the two lower bolts alternately and in steps using a torque wrench until the torque wrench releases (or clicks) briefly at the maximum value in Newton metres (Nm) specified on the clamping part.

Then tighten up the upper bolt using a torque wrench until the torque wrench releases (or clicks) briefly at 3 Nm less than the maximum torque in Nm specified on the clamping parts.

Checking all systems

Check to ensure the saddle rails are being held securely in the seat post clamp by grabbing **(l)** the front and back of the saddle and weighting each end alternately to see whether it moves. A loose saddle can lead to an accident.

If the clamping mechanism on the carbon seat post can not be tightened in place by tightening the bolt(s) to the specified torque, do not ride the bike until you have resolved the issue with the help of your local RITCHEY dealer.

Never exceed RITCHEY's recommended torque, specified on the components.

If you have any doubt regarding proper torque, or you do not have a torque wrench, seek the assistance of a RITCHEY dealer. Failure to do so could lead to the over-tightening of bolts, causing premature wear or component failure while riding, which could in turn lead to a crash and potential injury.

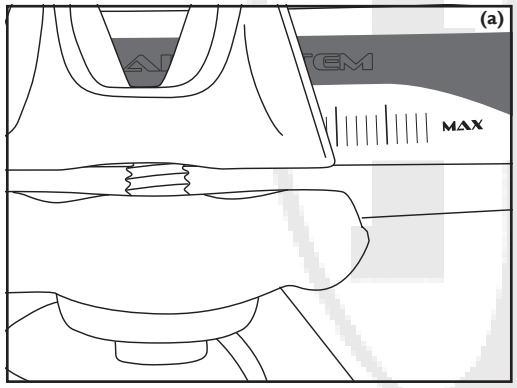
Determining correct saddle height

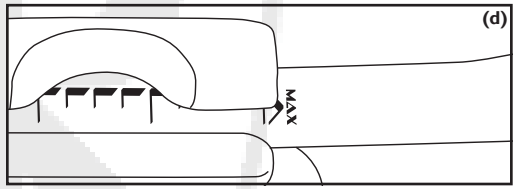
Correct saddle height provides maximum pedaling comfort and efficiency. When pedalling, the pedal axles (or "spindles") should be positioned directly below or slightly behind the ball of your foot.

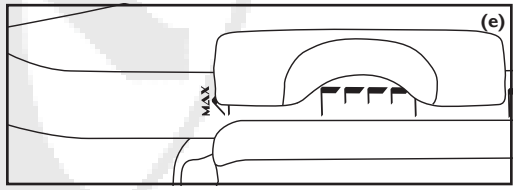
With the pedal axles positioned under your feet as described above, your legs should not extend completely at the pedal's farthest point from the saddle during your pedal stroke, otherwise your motions will become awkward and you can stress your knees and other joints.

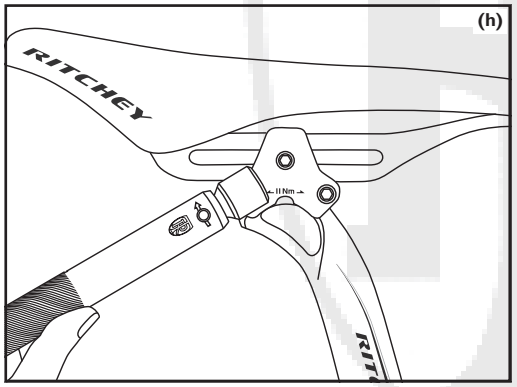
You can check the height of your saddle in the following, simple way. This is best done wearing flat-soled casual shoes.

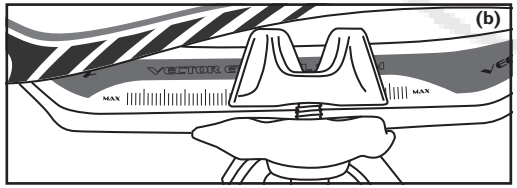
When riding off-road it can be helpful to lower the seat post slightly. However, be aware that a lower seat post position over extended periods can lead to knee pain. If you experience knee or hip discomfort, immediately seek the advice and assistance of a certified bicycle fit expert or qualified retailer.

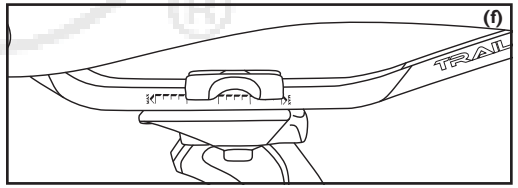


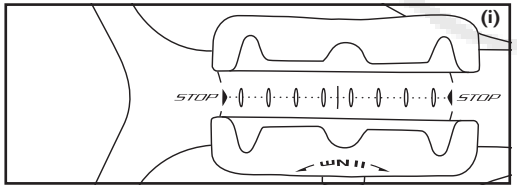


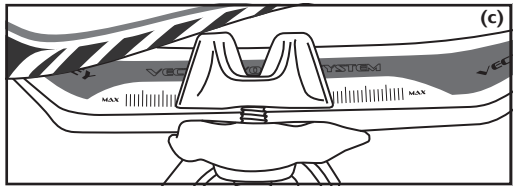


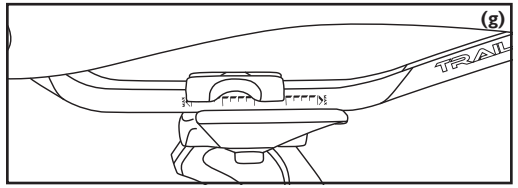


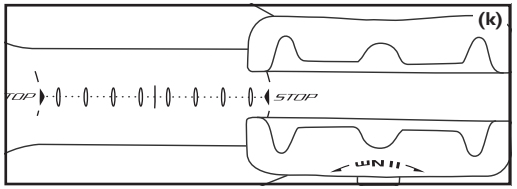


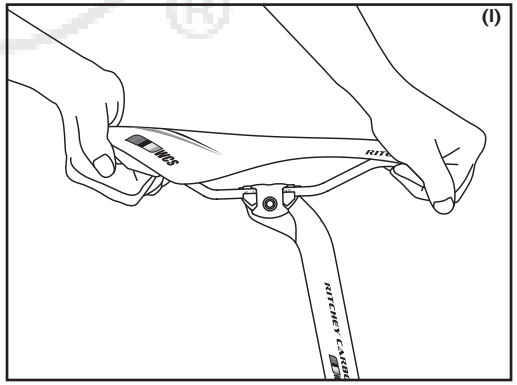












Sit on the saddle with your hips even and put your heel on the pedal at the pedal's most distant rotational point from the saddle. In this position your leg should be fully stretched and your hips should not be tilted to either side **(a)**.

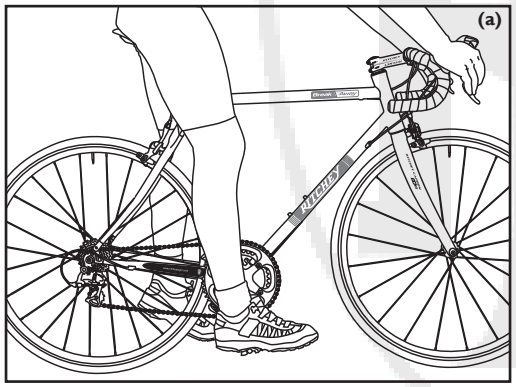
Adjusting the seat post for correct saddle height

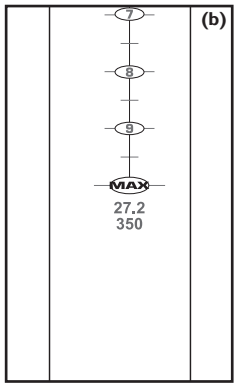
To modify saddle height, loosen the seat clamp binder bolt or quick-release lever (first read the section below: **"How to use quick-releases at seat post clamps"**). Use a suitable tool to loosen the seat clamp binder bolt, turning it counter clockwise two to three turns, or open the seat clamp quick release.

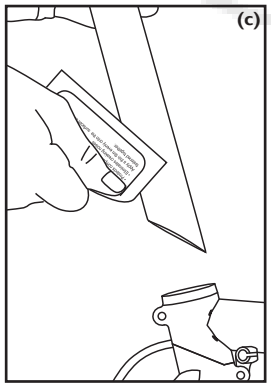
Now you can adjust saddle height to the desired position.

Be sure not to pull the seat post too far out of the seat tube. The "hash" marks or numbered position lines on the back of the seat post will serve as a guide, especially the "Min. Insert **(b)**" (i.e. "Minimum Insertion") line.

⚠ In the case of frames with seat tubes that extend beyond the top of the frame's top tube, the seat post should be inserted into the seat tube at least a few millimeters below the bottom of the top tube and below the top of the seat stays! This can mean a minimum insertion length of 10 centimeters (4.5 in.) or more.







Installation of alloy seat posts in steel, aluminium or titanium frames

Make sure that the portion of the seat post inserted inside the seat tube is always well greased. Do not use brute force to insert the seat post or move it up and down inside the seat tube if it does not move easily. Instead, ask your RITCHEY dealer for assistance.

Installation of carbon seat posts

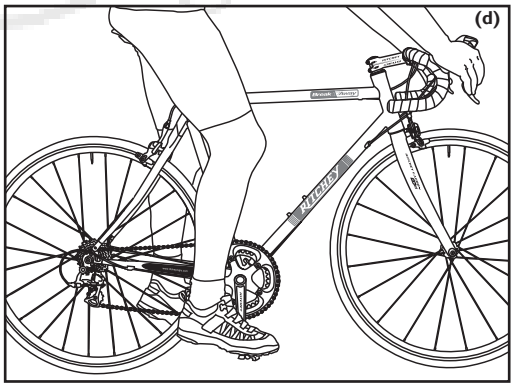
If you use carbon seat posts you have to make sure that the seat tube – no matter what material it is made of – is absolutely free of lubricants. For road bikes, which do not generally require saddle height adjustments during a ride, apply RITCHEY Liquid Torque to the seat post shaft and the inside of the seat tube to ensure the best possible hold at specified clamp bolt torque. **(c)**

Tighten the seat clamp again by either turning the seat post binder bolt clockwise or by closing the quick-release (first read the section below: **"How to use quick-releases at seat post clamps"**). Closing the quick-release should not require much strength or force. If it does, it may indicate that the seat post is the wrong diameter for the frame's seat tube.

Verify that the seat clamp is sufficiently tight by taking hold of the saddle at both ends and trying to rotate the seat post inside the seat tube. This should not be possible to do. If the seat post does rotate, you may need to further tighten the clamp bolt or the quick-release in small increments and check again, making sure not to exceed the recommended maximum torque.

If there is still movement, verify that the bolt has been tightened to the recommended torque. If you are unsure what the proper torque is for the given seat clamp, check the manufacturer's user instructions, or seek the assistance of an authorized dealer. If the recommended torque has been applied to the bolts and the clamping force is still not sufficient to hold the seat post in place, loosen the bolt, remove the seat post from the seat tube, apply RITCHEY Liquid Torque to clamp area and tighten the bolt again to the specified torque. If the seat post is still not held firmly in place, seek the assistance of a RITCHEY dealer or other qualified mechanic.

⚠ In the case of an alloy seat post, never apply grease or oil to a seat tube made of carbon, unless an aluminium sleeve has been inserted to interface with the seat post. If you install a carbon fibre seat post, do not apply grease to it or the inside of the seat tube, even if the seat tube is made of a steel or alloy. If carbon fibre parts have had contact with grease or oil, they may never be able to be clamped in a secure and safe way again.



⚠ Take care not to over-tighten the clamping mechanism of the seat tube. Too strong a clamping force can cause the seat post and/or the frame to fail, which can lead to an accident and possible injury to the rider.

Has the leg extension test described above produced a desirable result? Check by moving the pedal to its farthest rotational point from the saddle and placing the ball of your foot over the pedal axle or slightly forward (the ideal positioning for efficient pedaling).

If your knee is slightly bent, you have probably positioned the saddle at the correct height **(d)**.

Check whether you can balance safely on your bike while stopped by sitting on the saddle and extending your legs and touching your toes to the ground. If not, you should lower the saddle until you can, at least to begin with.

Never ride your bike with the seat post drawn out beyond the minimum insertion mark! The seat post might break or cause severe damage to the frame **(e)**. It could also result in a crash and potential injury.

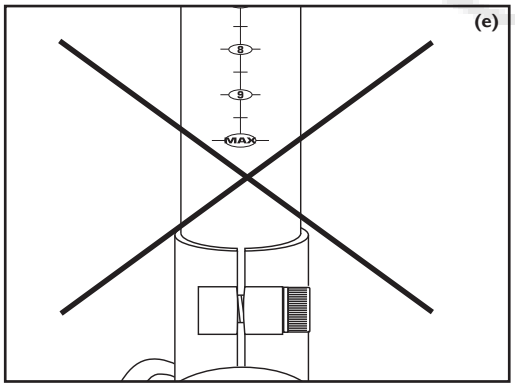
⚠ In the case of frames with seat tubes that extend beyond the top of the frame's top tube, the seat post should be inserted into the seat tube at least a few millimeters below the bottom of the top tube and below the top of the seat stays! This can mean a minimum insertion length of 10 centimeters (4.5 in.) or more.

ⓘ If sitting on your bike causes numbness in your crotch, it could be due to the saddle. Your local RITCHEY dealer should have access to a wide range of saddles and can assist you in finding and choosing one that is comfortable and does not cause numbness.

Adjustment of the "Mast Topper" seat post

The range of vertical adjustment is approximately 20 mm, which is why the extended seat tube of a compatible frame must be carefully measured and cut to precisely the right length.

In order to fine-tune and finalize your saddle position, loosen the bolt one to two turns and shift the mast topper seat post up or down a few millimetres, as needed. If the uppermost end of the seat tube is visible in the slot of the mast topper seat post, the seat tube is not inserted far enough into the mast topper seat post and sufficient clamping hold might not be possible, potentially resulting in failure, which could lead to an accident and potential injury **(f)**.



If the uppermost end of the seat tube is not visible in the slot of the mast topper seat post, adjust the mast topper seat post clamp according to directions in the **"Adjusting the seat post for correct saddle height"** section. Also read **"Installing components with RITCHEY Liquid Torque"** and implement Liquid Torque as needed for sure clamping hold.

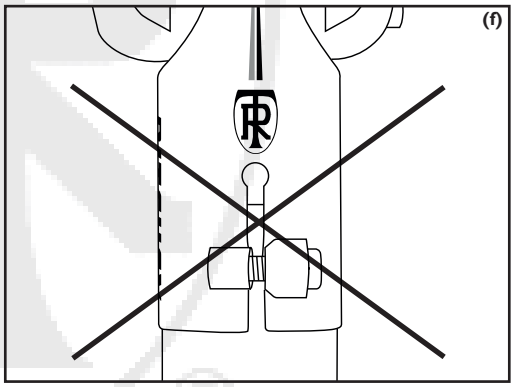
How to use quick-releases at seat post clamps

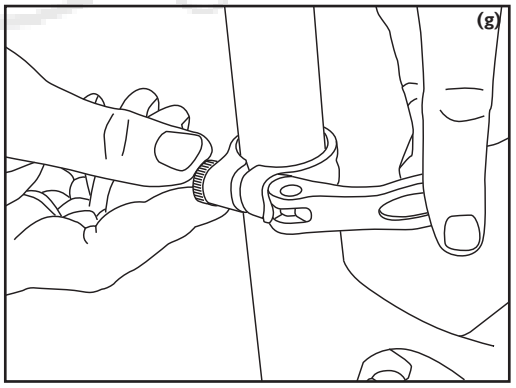
Because the proper use of quick-releases is not common knowledge, they have often been the cause of accidents. We strongly suggest you read the following instructions and practice the procedures as outlined.

Quick-release retention mechanisms essentially consist of two adjustable parts **(g)**:

1. A lever on one side of the clamp attached in a hinged fashion to the clamp's binder bolt. When the lever is opened, it loosens the clamp. When it is closed, it tightens, generating significant clamping force.

2. The binder nut on the other side of the clamp used to adjust and set tension by moving it one way or the other along the threaded portion of the binder bolt.





How to fasten securely the seat post clamp

Open the quick-release **(a)**. In many cases you will see "Open" marked on the lever.

Close it again. Now you should see "Close" marked on the outside of the lever.

When closing the lever, it should at first move easily, not yet tightening the clamp.

As you move the lever toward full closure, you should feel increasing resistance, until it takes considerable effort at the end. Use your thumb to push on the lever while your fingers wrap around the seat post or frame for leverage and stability **(b)**. Be sure to close the lever completely for maximum hold and to ensure the quick-release assembly remains in the closed position.

In the closed position, the lever should be more or less parallel to the bike, i.e. the lever should not stick out to the side.

The lever should come to rest close to the clamp and close to the frame so that it cannot be opened accidentally.

To check whether the clamp is sufficiently tight and the lever securely locked in place, try to rotate the lever in the closed position. Do this by applying pressure to the end of the lever as if to turn it in a circle.

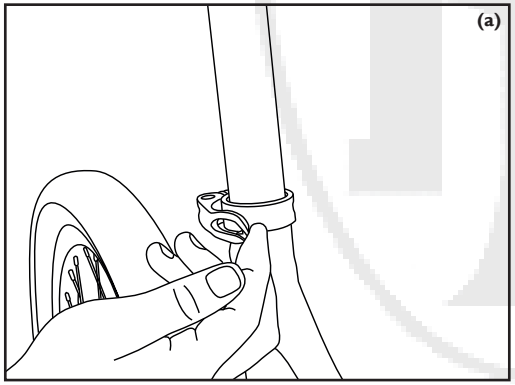
If you can rotate the lever, the quick-release is not sufficiently tight and the seat post not securely held in place by the seat clamp. Open the lever again and screw the binder nut clockwise in small increments, closing the lever each time to see if clamping force has been increased sufficiently.

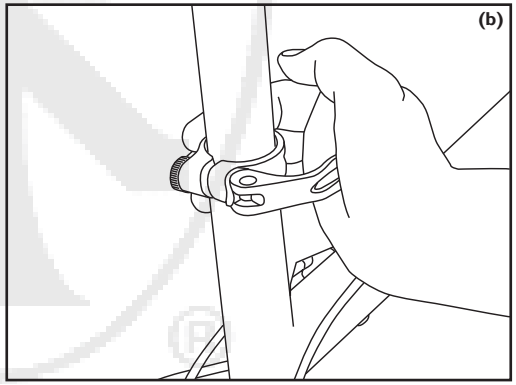
Check again to see whether the clamp is sufficiently tight by repeating attempts to rotate the closed lever. If the lever can no longer be rotated, the clamping force may now be sufficient.

Finally, check whether the seat post is being held firmly in place by taking hold of the saddle and attempting to twist the seat post inside the seat tube. If the seat post does not rotate inside the seat tube, the seat clamp should be sufficiently tight.

Quick-releases that have not been closed properly can cause parts to come loose.

RITCHEY does not recommend using quick-release seat clamps in conjunction with carbon seat posts, because it is not possible to measure the torque applied to the seat clamp. Too much clamping force could damage a carbon seat post shaft, resulting in component failure, which could lead to an accident and potential injury.





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If you have any question, please ask your national distributor .You will find a distributors list at www.ritcheylogic.com.

Warranty terms

Under European consumer law, the purchaser has full statutory warranty rights within the first two years from date of purchase. In North America, these rights apply to the first year from the date of purchase. According to these laws, your bicycle dealer is responsible for ensuring the product is free of defects that could cause premature wear from normal use.

The two year warranty law is only valid in countries where European (EU) regulations apply! Please ask your bicycle dealer about the regulations in your country.

Warranty claims will only be accepted if the bicycle has been used solely for its intended purpose (see section, **"Before your first ride – determined use")**.

It does not cover damage resulting from wear, neglect (insufficient care and maintenance), accidents, overstress caused by overloading, incorrect installation, improper treatment or as a result of modifications made to the component.

Be sure to follow all assembly instructions in this manual precisely, as well as all additional instructions provided by the manufacturers of products used in conjunction with RITCHEY products, especially bolt torque specifications and prescribed maintenance. Observe all instructions with regard to procedures and verification processes listed in this manual, as well as any other instructions that may be included in the delivery of RITCHEY products. Also adhere strictly to any and all instructions pertaining to the replacement of safety relevant components, such as seat posts, stems, etc.

Your direct contact with regard to all issues outlined in this manual and corresponding instruction is your local RITCHEY dealer, who should be qualified to answer your questions. In order to obtain assistance from a RITCHEY dealer, you may be required to show your receipt.

You must contact your reseller if you have a warranty issue or concern, i.e. the RITCHEY dealer who sold you the bicycle component in question. RITCHEY has exclusive agreements with all of its reseller partners to service potential warranties. If you purchase a RITCHEY product from an unauthorized reseller (e.g.: an auction site at the internet), you have no recourse through RITCHEY or any of its authorized resellers, so you must seek resolution with the reseller who sold you the product.

A note on wear

Bicycle components are subject to wear due to normal and proper use. The rate of wear will depend on care and maintenance, the bike's usage and the environment it is exposed to, such as rain, mud, dust, and sand. Some components require regular care and maintenance, but despite the best maintenance program, all components will eventually reach the end of their serviceable life, depending on conditions and intensity of use.

The following RITCHEY part is especially subject to wear due to the nature of its intended use and not covered for wear under this warranty:

The saddle covering which is subject to compression, abrasion and soiling.

Manufacturer's Guarantee

RITCHEY products have been developed and manufactured with great care and have gone through numerous testing controls. Our products are examined as part of our internal quality control process to meet strict standards, as well as by external, neutral test laboratories.

For the EU market we grant, independent of legal regulations, a voluntary guarantee that your RITCHEY product is free of manufacturing and processing defects for 2 years from the date of purchase.

For the North American Market we grant, independent of legal regulations, a voluntarily guarantee, that your RITCHEY product is free of manufacturing and processing defects for one year from date of purchase (excluding saddle surfaces, as clarified above.)

This manufacturer's guarantee only applies to claims made by the initial buyer, who must present the purchase receipt with date of purchase, dealer address and model number. Guarantee claims will only be accepted if the bicycle has been used in accordance with the intended use of RITCHEY products.

This guarantee does not cover damage resulting from:

- wear
- neglect (insufficient care and maintenance)
- accidents
- overstress caused by overloading
- incorrect installation or improper treatment
- changes or modifications to the component (e.g. cutting the seat post).

The instructions in this and all RITCHEY manuals are carefully designed to maximize the life of RITCHEY products. Any guarantees are void if installation instructions are ignored and/or if regular inspection and maintenance intervals are neglected.

In the case of a warranty claim, RITCHEY reserves the right to provide all or part of the current successor model in an available colour – or if such part is not available, a higher grade model – to remedy the claim. The guarantee does not cover assembly, refitting costs or any new accessories that may be required (e.g. different dimension parts).

The guarantee does not cover labour and transport costs, nor does it cover follow-up costs resulting from defects.

Your direct contact for any issue is your RITCHEY dealer who is authorized to respond to your inquiries.

If you have any question, please ask your national distributor .You will find a distributors list at www.ritcheylogic.com.

Technical details in the text and illustrations of this manual are subject to change.

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Concept and text:
Zedler – Institut für Fahrradtechnik und -Sicherheit GmbH
www.zedler.de
Edition 3, October 2012

RITCHEY User Manual

Handlebars, bar ends, aero bars, stems, grips and bar tape

Important information about use, care, maintenance and installation

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Notes on This User Manual

Pay particular attention to the following symbols:

This symbol means that your life or health may be in danger unless you comply with provided instructions or carry out prescribed measures.

This symbol warns you about actions that could lead to damage of property or the environment.

This symbol indicates there is special information on how to handle the product and may refer you to a specific passage in this manual requiring your special attention.

The possible consequences described above are not repeated every time one of the symbols appears!

Introduction

Congratulations, when buying a RITCHEY part, you made a superb choice. RITCHEY develops, tests and manufactures our products with dedication to uphold the highest standards of quality. Like all high-quality sports equipment, RITCHEY components require careful installation in order to function properly and to provide long-term dependability. We recommend that you ask a qualified mechanic at your authorized RITCHEY dealer for help with installation and use RITCHEY components together whenever possible in order to achieve optimum performance and durability. Our precise tolerances are intended to ensure component compatibility, and are carefully monitored during production and quality control so that installation will be easy and trouble-free.

This manual contains important notes about use, care, maintenance and installation.

Please read this manual carefully, beginning with the general information, followed by the chapter referring to the component you purchased, or you intend to use. Doing so will ensure smooth installation and trouble-free use of the product.

Keep this user manual for your records and future reference. If you sell or lend your component or bike to someone, share this manual with the new user.

With RITCHEY components, as with all lightweight bicycle products, special care and attention need to be paid to proper installation and intended use. Materials used by RITCHEY are extremely strong and durable, with very low weight. However, sometimes they can break, rather than bend, in the event of an accident. Internal damage to the component may not show up obviously or with visible signs of damage. In the event of undue stress of any kind, e.g. as a result of a crash, the components need to be inspected by a qualified mechanic to ensure the product is safe to use. Therefore, consult your RITCHEY dealer after any such occurrence.

Before Your First Ride – Intended Use

RITCHEY handlebars, bar ends and stems **(a)** are designed for road racing, triathlon, cyclocross, trekking and mountain bikes and their typical use. They are, however, not suitable for freeriding, dual slalom, downhill riding, jumps or the like. If you use your bike for this type of cycling you should opft for the special RITCHEY SC ("Severe Condition") components.

Never make any changes to handlebars, bar ends and stems. Do not file or drill holes in components, especially in carbon components, as it will compromise their structural integrity and void your warranty.

RITCHEY stems are designed to be only used with threadless headsets, also referred to as Aheadset®-headsets! Attempting to use a RITCHEY stem in combination with a threaded fork steerer can lead to sudden failure, resulting in a crash with unforeseeable consequences.

Make sure when performing any adjusting that the brake levers are always within easy reach. Keep in mind that the brake levers are not within easy reach when you ride with your hands on the bar ends or aero bars. The SuperLogic Evolution and Logic II road handlebars are not suitable for clip-on aero bars!

We recommend that you always use RITCHEY components together in order to achieve optimum performance and component durability.

If you intend to combine RITCHEY components (e.g. handlebars or stems) with components from other manufacturers, make sure they are compatible, i.e. that all dimensions are identical with the specifications given in this manual.

RITCHEY handlebars and stems are designed for an overall load of 110 kilos (242 lbs) including rider and baggage, e.g. rucksack.

After a crash, accident or other major impact, have your RITCHEY handlebars, stems and bar ends or aero bars, checked and, if necessary, replaced by your RITCHEY dealer for your own safety.

If your handlebars, stem and bar ends or aero bars, if mounted, produce any creaking or cracking noises or show any external damage, such as notches, cracks, dents, discoloration etc., do not use your bike any longer. Ask your RITCHEY dealer to check these components thoroughly and to replace them, if necessary.

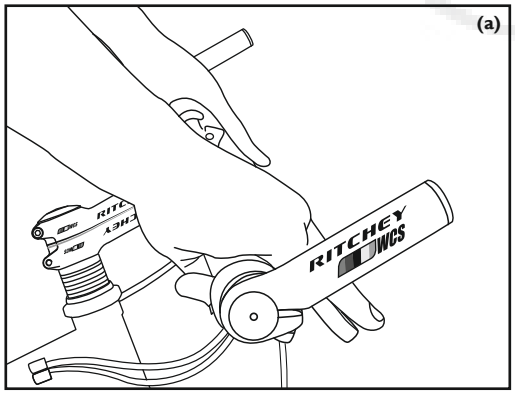
In case you have any questions, please contact your RITCHEY dealer.

Before Every Ride

1. Verify the tight fit of the stem on the fork steerer and of the handlebars in the stem.
2. Are the quick-release levers or nuts of the front and rear wheel properly closed? For more information see the respective chapters of your general bike user manual.

Improperly closed quick-releases or thru axles can cause the wheels to come loose. This can lead to a serious accident!

Read the user manual of your bike manufacturer before you set off!



(a)

Special Characteristics of Carbon

All RITCHEY products made of carbon fiber-reinforced plastic, also referred to as carbon or abbreviated CFR, require special care and attention.

Carbon is an extremely strong material that allows the production of components combining high compression resistance with low weight. Please note that carbon, unlike metals, shows no visible deformation after undue stress even though some of its fibers may be damaged. This makes it very dangerous to continue using a carbon component after an impact or undue stress, as it may fail without previous warning, thereby causing an accident with unforeseeable consequences.

If your RITCHEY carbon component sustained this kind of impact or undue stress, we strongly recommend that you take your complete bike to your RITCHEY dealer for inspection. They will check the damaged bike and, if necessary, replace the defective component. In case there are any unanswered questions or doubts, the RITCHEY dealer can contact the RITCHEY after-sales department or one of the RITCHEY distributors directly.

For safety reasons components made of carbon must never be repaired! Replace a damaged component immediately. Make sure that any damage components will not be re-used. It should be destroyed to ensure that re-use is impossible.

Components made of carbon must under no circumstances be exposed to excessive heat. Therefore, never have a carbon component enamelled or powder-coated. The temperatures required for doing so could destroy it. Do not leave carbon fiber components near a source of heat or in a car or trunk during hot or sunny weather.

Components made of carbon have like all lightweight components only a limited service life. Therefore, to be on the safe side it is recommended that you replace handlebars, stems and headsets depending on use at regular intervals (e.g. every three years), even if they were not involved in an accident or similar incident.

Make sure the clamping areas are absolutely free of grease and other lubricants, especially when the clamping surfaces are made of carbon! Grease will penetrate the surface of the carbon component and undermine the stability of joined parts by reducing the coefficient of friction. Greased carbon components may never again provide a safe clamping surface! When you install carbon components, apply RITCHEY Liquide Torque to interconnecting surfaces to increase friction. This will allow you to tighten bolts to low and therefore gentle torque values.

If any notches, tears, deformations, dents or discolorations etc. are visible on your carbon component, or if it makes creaking or cracking noises, do not use the bike until the component has been replaced! After undue stress, a crash or other major impact, replace the component or have it inspected by your local RITCHEY dealer before using it again.

If you have carbon road handlebars, do not use clip-on or aero parts, unless the handlebars are especially designed, such as the RITCHEY Pro Carbon Evo or Pro Carbon Matrix road handlebars.

Cleaning and Care

Clean the handlebars and the stem, the bar ends as well as the grips and the bar tape with water and a soft rag at regular intervals. If necessary, use a non abrasive soap to remove grime. You may add a little detergent liquid for cleaning and removing tough stains, such as oil or grease, from hard surfaces. Do not use degreasing agents, which contain organic solvents (e.g. acetone, trichloroethylene, methylene, etc.). Chemicals of this sort may damage the finish or substructure of the material.

After your bike has dried, apply a wax based polish **(a)** to painted, carbon and metal surfaces (exception: braking surfaces). Polish the components after the wax has dried. With this treatment your handlebars, stem and bar ends will keep their nice appearance for years.

While cleaning your bike, look for cracks, scratches, dents, as well as for deformed or discoloured material. If you think there may be a problem, see your local RITCHEY dealer. Have damaged or defective components replaced immediately.

Make absolutely sure to keep the braking surfaces or rotors free of cleaning agent, grease or lubricants. Otherwise the braking performance might be drastically reduced or even rendered ineffective.

Be sure to never store the handlebars and the stem in the blazing sun or near a source of heat.

Remove the handlebar tape once a year. Clean the handlebars with water and a little liquid soap. If necessary, remove any traces of adhesive with alcohol. Inspect the handlebars for any damage or corrosion. Immediately replace corroded or damaged handlebars for your own safety.

Maintenance

Check the torque values of all bolts after the first 100 to 300 km (60 to 180 miles) or 5 to 15 hours of use. If necessary, tighten them as prescribed with a torque wrench. Check at least every 1,500 km (930 miles) or 75 hours of use thereafter.

Loose or overly tightened bolts may result in an accident!

After about three years the handlebars, the stem and the bar ends have aged to an extent that they need to be checked thoroughly and have to be replaced, if necessary. Ask your RITCHEY dealer for advice.

General Notes on Installation

In general, handlebars, stem and bar end installation are jobs for skilled mechanics. We therefore recommend that you have these jobs performed by an authorized RITCHEY dealer. Each of the following instructions must be followed strictly. Non-observance of these instructions can lead to component failure, resulting in a severe accident or injuries.

Installing non-matching components can result in bolt failure and consequently in a serious accident.

We recommend using RITCHEY handlebars, stems and bar ends together, as they are designed to fit and function as an integrated whole. If you decide to use a component from another manufacturer, read the user manual of this component regarding size accuracy to ensure proper fit and usability with RITCHEY components.

RITCHEY assumes no responsibility for problems resulting from a RITCHEY component being used with a component from another manufacturer.

Before installation watch out for sharp edges and burrs on all clamping surfaces of the handlebars, stem **(b)** and bar ends. Do not use these components, if they have burrs or sharp edges. If there are burrs or sharp edges on a RITCHEY or non-RITCHEY component, have your RITCHEY dealer inspect it to see, whether the issue can be remedied or whether the component must be replaced.

If you fit new handlebars to an existing stem, check the old handlebars carefully for scratches, abrasion marks and notches after removal. Notches in the clamping area indicate defective processing or deficient design of the stem in these areas.

Do not use components, if you are not absolutely sure about their compatibility. In case of any doubt, ask your RITCHEY dealer who will contact, if necessary, our after-sales service hotline.

Do not use further damaged components. If you have the slightest doubt, we recommend that you replace the component. Do not use your bike until this has been done.

RITCHEY Liquid Torque

Installing components with RITCHEY Liquid Torque

Carbon fiber components are particularly vulnerable to damage caused by excessive clamping force. RITCHEY Liquid Torque **(c)** creates extra friction between two surfaces, allowing the necessary clamping force to be reduced by up to 30 %.

This is especially useful in the clamping areas of handlebars and stem or fork steerer tube and stem, i.e. two areas where too much clamping force can damage either component, causing component failure or voiding the warranty. Carbon components are particularly sensitive to crushing as a result of too high clamping force. By reducing the clamping force, RITCHEY Liquid Torque relieves stress on sensitive carbon surfaces, preventing damage to fibers or the cracking of the carbon substructure. It also retains its effectiveness in wet conditions and provides maximum protection against corrosion.

RITCHEY Liquid Torque can be used for all carbon, aluminum and steel connections including:

- stem/handlebars clamping areas
- stem/steerer tube clamping areas
- seat post/frame clamping areas

RITCHEY Liquid Torque is ideal for this purpose, as it does not harden.

Precautions for use

Prior to applying RITCHEY Liquid Torque, remove dirt particles and lubricant residues from the surfaces to be treated. Next, apply a thin and even film of RITCHEY Liquid Torque to the cleaned surfaces using a brush, lint-free rag or chamois. Install components as directed by the manufacturer, by using a torque wrench (such as the RITCHEY Torque Wrench recommended for use with all RITCHEY handlebars and stems) and do not to exceed the manufacturer's maximum torque values. Remove excessive Liquid Torque and re-seal the RITCHEY Liquid Torque container after use.

Additional information

Many manufacturer warranties will not cover damage to component due to overtightening. Refer to manufacturer's recommended torque limits for each component. Always use a torque wrench to verify you are within specified torque limits, and do not exceed them. Using RITCHEY Liquid Torque will allow you to safely install your bicycle components – particularly in the case of carbon fiber – without exceeding the torque limits specified by the manufacturers. In most cases, using RITCHEY Liquid Torque will enable you to use as much as 30% less torque while installing your components.

RITCHEY Liquid Torque is neutral to copper and aluminum alloys, steel and synthetic material, and will not damage product surfaces.

For detailed information about RITCHEY Liquid Torque, visit the online shop of RITCHEY International at www.ritchey.ch.

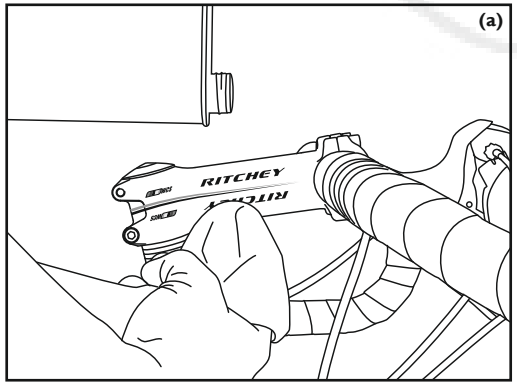
RITCHEY Torqkey

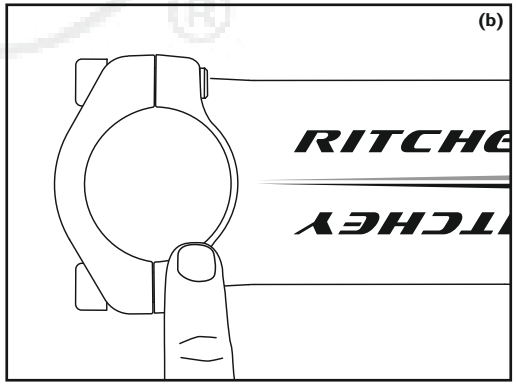
To achieve long lasting and problem-free clamping of components, RITCHEY considers the use of a torque wrench absolutely necessary. The RITCHEY Torqkey **(d)** is designed for use with all RITCHEY road and mountain bike stems, handlebars and bar ends. It is a 4 mm hex bolt/Allen wrench pre-set to 5 Nm, which is both the ideal clamping force as well as the maximum prescribed torque, used to tighten RITCHEY stem, handlebars and bar ends bolts. If 5 Nm of torque does not generate sufficient clamping force, apply RITCHEY Liquid Torque to interconnecting surfaces to increase friction.

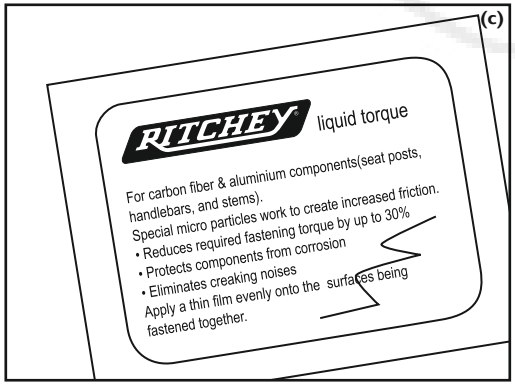
Exceeding 5 Nm of torque on clamp bolts of stem, steerer tube or handlebars creates too much clamping force, which can lead to component failure. This not only bears a high risk of accident, but also voids the warranty.

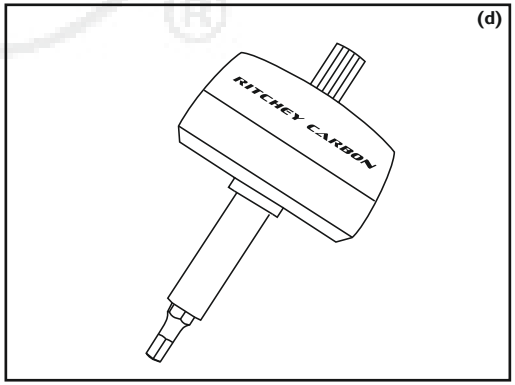
Loose or overly tightened bolts can result in component failure and in an accident. Strictly observe the torque specifications. If you do not have a high-quality torque wrench or a RITCHEY Torqkey, see your local RITCHEY dealer.

For detailed information about the RITCHEY Torqkey, visit the online shop of RITCHEY International at www.ritchey.ch.






(c)
RITCHEY
liquid torque
For carbon fiber & aluminium components(seat posts, handlebars, and stems).
Special micro particles work to create increased friction.
• Reduces required fastening torque by up to 30%
• Protects components from corrosion
• Eliminates creaking noises
Apply a thin film evenly onto the surfaces being fastened together.



RITCHEY Torque Wrench

For bolts tightened to another torque than 5 Nm, please use the RITCHEY Torque Wrench.

The RITCHEY Torque Wrench is suitable for torque settings from 2 Nm (e.g. for small aluminum bolts) to 16 Nm (e.g. for M6 bolts at some seat posts).

For detailed information about RITCHEY Torque Wrench, visit the online shop of RITCHEY International at www.ritchey.ch.

Installing Aheadset®-Stems

Many RITCHEY stems can be installed in either vertical orientation. These flip-flop models allow handlebars to be positioned at two different heights by simply inverting the stem **(a)**.

Verify that the stem and fork steerer tube always have matching or compatible clamp diameters **(b)**!

If you fit a new stem on a fork with carbon steerer tube, check the clamping area for notches or abrasion marks. In case such damage is actually visible, ask your RITCHEY dealer whether it is necessary to have the fork replaced.

Make sure the clamping areas are absolutely free of grease, especially when the clamping surfaces are made of carbon. Use RITCHEY Liquid Torque at the clamping areas to optimize clamp hold.

Grease the threads and the connecting surfaces/heads of the steerer clamp bolts. Do not apply lubricants to the clamping surfaces.

Slide the stem onto the fork steerer tube. It must fit snugly onto the fork. Do not fit stems which have play on the steerer tube.

Depending on the steerer tube length and the desired stem position, install spacers on the fork steerer above the upper cover of the headset, and/or above the stem **(c)**. You can stack them up to a maximum height of 30 mm.

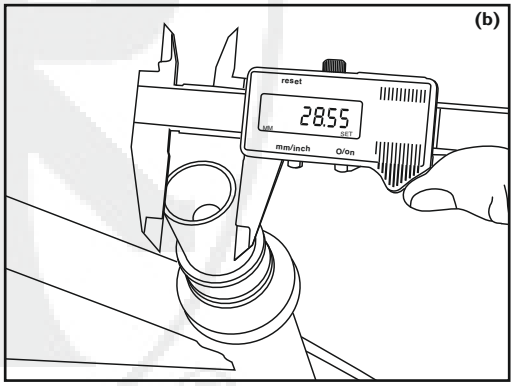
Spacers are available in different heights. You have installed the correct number of spacers, when the steerer tube ends 2 mm below the top edge of the stem.

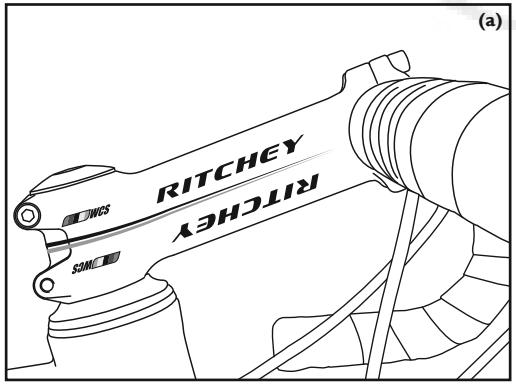
Make sure the stem provides sufficient support for the steerer tube and that the steerer tube ends 2 mm at the most below the top edge of the stem. This ensures a reliably clamping when tightening the clamping bolts of the steerer tube clamp to the the prescribed torque setting.

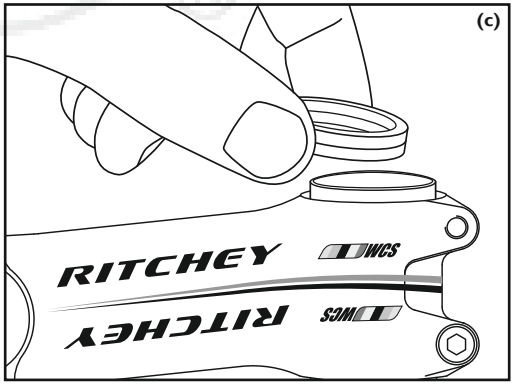
If your preferred stem height results in a deeper position of the stem on the steerer tube, the steerer tube projects from the stem. To check whether you have found the proper position, slide spacers on the steerer by making sure that the steerer tube ends 2 mm below the top edge of the stem. After the test ride the steerer tube of a carbon fork must be shortened.

The space between the top of the steerer tube and the upper edge of the stem should not exceed 2 to 3 mm **(d)**. Tighten the stem bolts only a little, if you intend to install the handlebar right afterwards. Finish by adjusting the headset.

The clamp bolts of RITCHEY stems are designed to oppose each other for proper load distribution during clamping. Please check that the bolt heads of RITCHEY stems are always oriented in opposition to each other.







Adjusting the Aheadset®-Headset

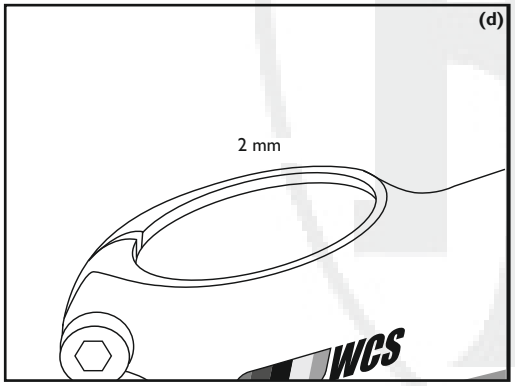
Adjusting the headset is a job for a skilled mechanic. Have this work done by an authorized RITCHEY dealer. If you intend to do the adjustment on your own, read the user manual of the headset manufacturer first and note that you need special tools, e.g a RITCHEY Torqkey.

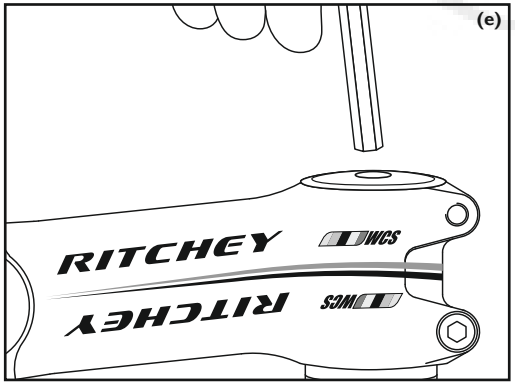
Release the clamping bolts on the stem side by two to three turns without unscrewing them entirely.

The Allen bolt located in the top cap is intended to re-adjust the bearing play **(e)**. Turning the bolt clockwise removes play, as the stem is pressed downward on the bearing; turning the bolt anti-clockwise increases the play. In case there is bearing play, tighten the adjusting bolt by another quarter or half a turn.

Check the headset for play as described in the user manual of your bike **(f)**. Do not overtighten the headset; otherwise there is the risk of headset failure.

Do not overtighten the top Allen bolt, it is intended for adjustment! Tighten the bolt carefully in quarter-turns and check the play regularly.





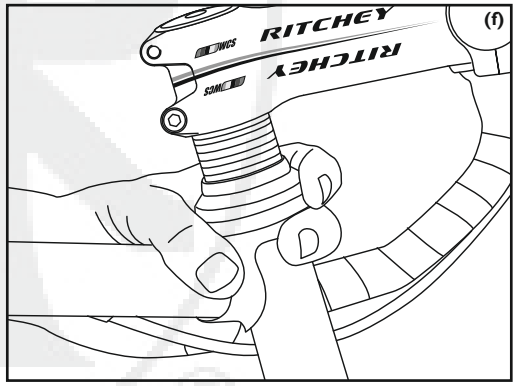
Once the play is properly adjusted, align the stem in the direction of motion. Check the alignment of frame and stem with the front wheel from the top. The handlebars should be at right angle to the direction of motion.

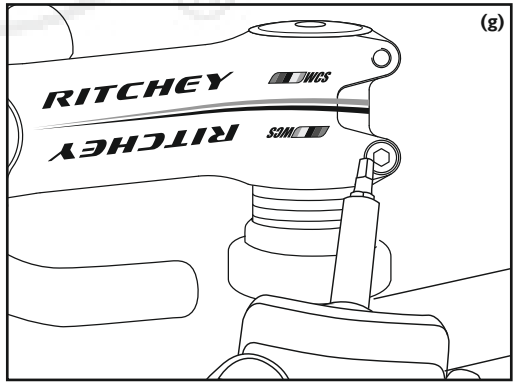
Tighten both clamping bolts alternately by using the RITCHEY Torqkey. If you use a standard torque wrench, start with a minimum tightening torque of 4 Nm **(g)**. In case the stem clamping is not tight enough, increase the tightening torque to 5 Nm or until the RITCHEY Torqkey clicks.

With carbon steerer tubes, make sure the inside of the tube is supported by an expander-cone mechanism for adjusting the headset. Strictly observe the instructions given in the user manual of the fork manufacturer before tightening the stem.

After adjusting the headset check the tight clamping of the stem by holding the front wheel between your knees and trying to turn the handlebars relative to the front wheel. A loose stem can lead to an accident!

If the stem cannot be tightened on the fork steerer tube to a tightening torque of 5 Nm, in spite of RITCHEY Liquid Torque on the clamping surfaces, stem and fork are incompatible. Replace the stem by a matching model or ask your RITCHEY dealer for assistance.





Installing the Handlebars

Before you start installation verify that the stem you have chosen has a clamping diameter matching the handlebars.

Stems with a 31.8 mm clamping are for example only compatible with handlebars with a clamping diameter of 31.8 mm.

Position the stem clamp in the middle of your new RITCHEY handlebars so that the handlebars extend the same distance from the stem on each side. If the handlebars do not slide easily into the stem clamp or if there is play between the two components, ask your RITCHEY dealer whether both components are compatible.

Mountain bike handlebars are normally mounted with the sweep supporting a natural ergonomic hand position, i.e. bent slightly rearward. The handlebar position is correct when your wrists are relaxed and your elbows not flared out too much.

In the case of road bikes the straight piece of the drops should be in parallel to the ground or point with the ends slightly downwards.

Tighten the greased bolts of the stem faceplate with your fingers by a few turns. Gently tighten all four bolts with a RITCHEY Torqkey or another quality torque wrench until they are snug and verify that the upper and lower clamping slots are identical in width. Do not exceed the prescribed torque settings **(a)**.

Tighten the fixing bolts evenly in a cross pattern, i.e. alternately and in small increments to the minimum limit of the recommended torque settings.

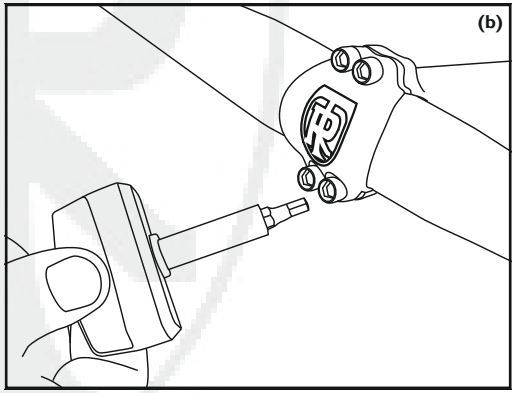
The recommended maximum torque setting for RITCHEY 4-bolt stems is 5 Nm **(b)**. Always use the RITCHEY Torqkey and observe the torque settings indicated on the component in case of doubt.

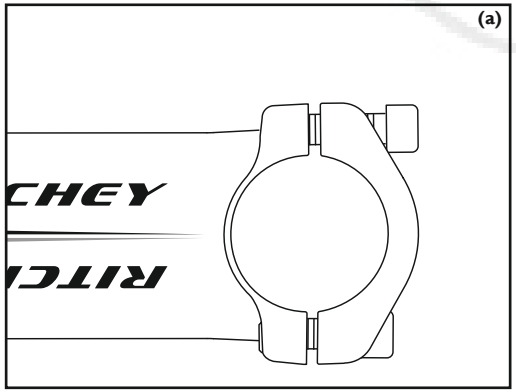
Check the shift/brake lever controls or the brake levers for burrs and sharp edges. Do not use shifters or brake levers with burrs or sharp edges to prevent your handlebars from damage and dents. Components that are affected by burrs and sharp edges should be checked by a RITCHEY dealer. They will see, whether this is a problem that can be solved or whether the component has to be replaced. Loosen clamping bolts completely to ensure clamps are open all the way before sliding the shifters and brake levers onto the handlebars.

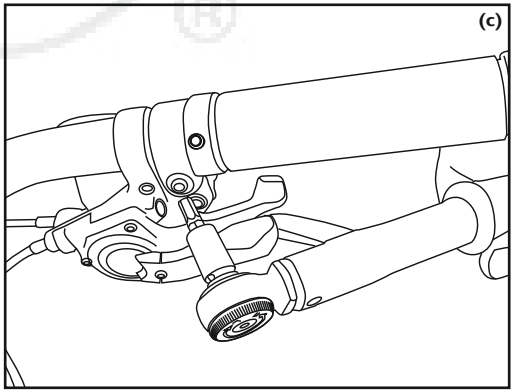
In the case of road bike shift/brake lever controls (Dual Control, Ergopower or DoubleTap) dismount the clamp completely from the control.

Start tightening the clamping bolts slightly, so that the controls can still rotate freely. Bring the controls to the desired position. Tighten the bolts to the prescribed torque value to ensure a reliable hold **(c)**.

Never rotate the controls on the handlebars after you have tightened the clamping bolts. Otherwise you will scratch the surface and mar the finish. In addition you run the risk of damaging the material.



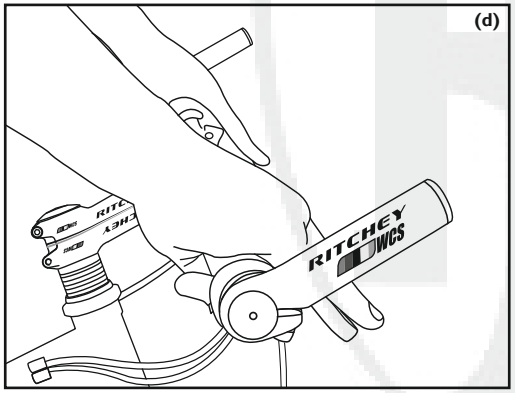


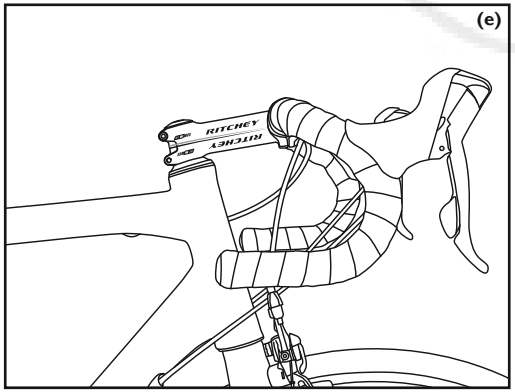


Read through the manufacturers' user manuals of all components before you follow the above instructions.

Never shorten carbon fiber mountain bike handlebars by cutting off the ends, as the handlebars are generally reinforced in the clamping areas of the shift/brake lever controls. Shortening handlebars by cutting off the ends can damage the handlebars and result in an accident during use! Any modification to a RITCHEY carbon component will void the warranty.

If you have a C260 stem, please read the additional instructions in chapter **"C260 Stems"**.





Mountain Bike – Adjusting Controls and Levers

Turn the loosened controls on the handlebars so that they show slightly downward. Sit on the saddle and place your hands on the controls with your fingers on the brake levers.

The back of your hands should form a straight line with your forearms. With your hands in the correct position adjust the shift levers accordingly **(d)** and tighten the clamping bolts of the brake and shift lever controls to the recommended torque values.

Road Bike – Adjusting the Handlebars

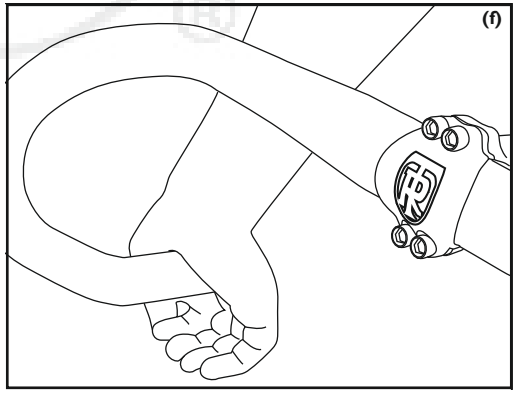
In the case of road bikes the straight piece of the drops should be in parallel to the ground or point with the ends slightly downwards **(e)**. Verify the tight fit of the handlebars in the stem by trying to rotate them.

You should not be able to rotate the handlebars **(f)**. Never exceed the torque value recommended by the manufacturer.

In case the handlebars are not tight, check that each bolt was tightened to the recommended torque value (5 Nm for RITCHEY stem clampint bolts). If each bolt was tightened to a torque value of 5 Nm and the clamping force is still insufficient, release the bolts, remove the handlebars from the stem and apply RITCHEY Liquid Torque to the clamping areas.

Retighten each bolt individually to a torque value of 5 Nm. If the handlebars are still not tight in the stem, contact your RITCHEY dealer or ask a skilled mechanic for advice.

Check the adjustment of the brake/shift levers, if necessary, as described in section **"Installing the Handlebars"**.



Installing Bar Ends

Bar ends add more hand positions to your handlebar configuration. They are usually set to a position that provides more leverage and more comfort when you pedal out of the saddle.

RITCHEY bar ends are suitable for usage with almost all RITCHEY handlebars, regardless of whether they are made of aluminum or carbon.

RITCHEY SuperLogic mountain bike handlebars are not suitable for being fitted with bar ends!

If you intend to install RITCHEY bar ends on non-RITCHEY handlebars, make sure first that the handlebars are suitable for being fitted with bar ends. In case of doubt ask your RITCHEY dealer for advice.

Mounting bar ends to unsuitable handlebars, i.e. handlebars with thin wall thicknesses that are not designed to withstand the specific load, can lead to handlebar failure during use and result in an accident!

Verify that the clamping areas of the bar ends are free of burrs and sharp edges. Do not use bar ends with burrs or sharp edges. Burrs are sharp and can cut into other components. If there are any burrs or sharp edges, contact your RITCHEY dealer.

Release the clamping bolts of the brake/shift lever controls and slide them together with the handlebar grips towards the centre of the handlebars until there is enough space to install the bar ends. If the grips have end caps, cut them before you move the grips.

Do not use any liquids or grease to loosen the grips; if necessary, use compressed air to loosen them.

Loosen the bar end bolts on the bottom side of the bar ends by two to three complete turns.

Slide the bar ends on the respective side of the handlebars **(a)**. Angle the bar ends according to personal preference and make sure they are both at the same angle **(b)**. Observe possible right/left references on the bar ends.

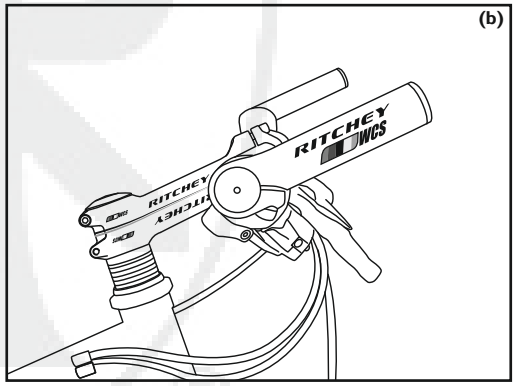
Retighten the bolts carefully in small increments of 0.5 Nm. Do not exceed the maximum torque value of 5 Nm for the clamping bolts of RITCHEY bar ends or bar ends used with RITCHEY handlebars.

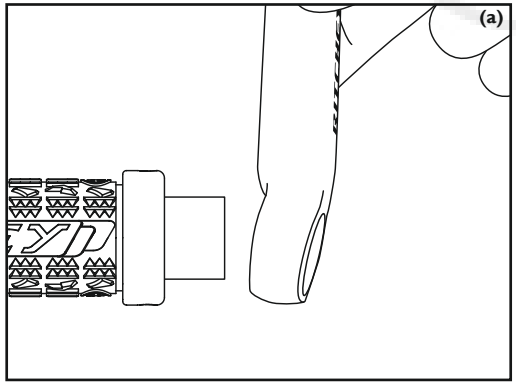
Never exceed the maximum torque indicated on the components **(c)**.

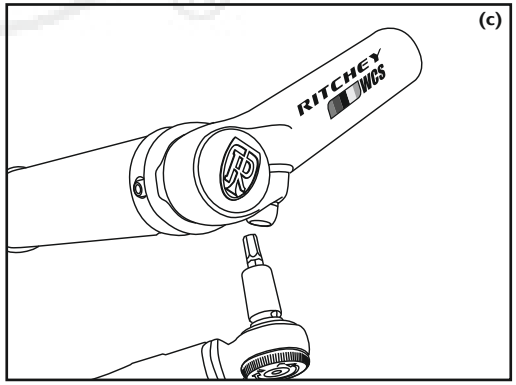
If a tight fit of the bar ends on the handlebars cannot be achieved in spite of using RITCHEY Liquid Torque on the contact surfaces, the bars ends and the handlebars are not compatible. Replace the bar ends or the handlebars by appropriate models.

The interfacing clamping areas of stems, handlebars, bar ends, shift and brake levers must be tightened to specified torque settings.

Installing unsuitable bar ends to RITCHEY handlebars can lead to sudden failure during use and therefore result in an accident. Highly conified handlebars and handlebars made of carbon are mainly not suitable for bar ends. Ask your RITCHEY dealer for advice.







Adjusting the Handlebar Height

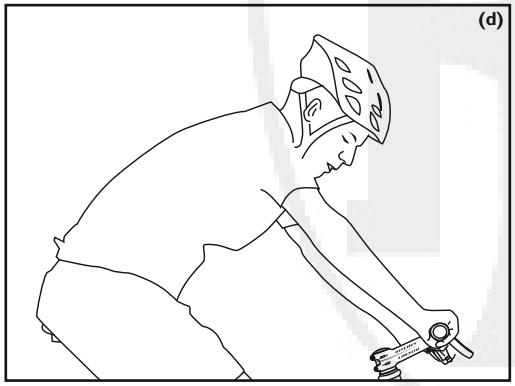
Both the handlebar height and the stem length determine how much your upper body will be inclined forward **(d)**. Lowering the handlebars gives the rider a streamlined position and brings more weight to bear on the front wheel. An excessively low handlebar position may prove less comfortable, especially on longer rides, and can strain wrists, arms, upper body and neck.

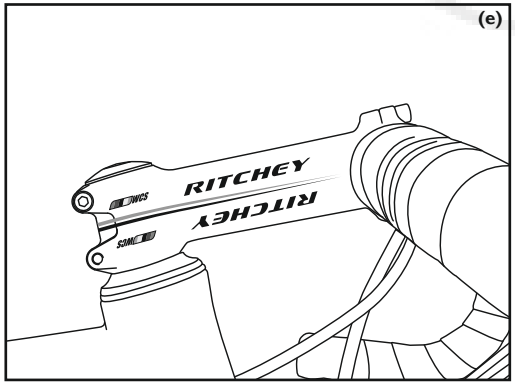
Seek the assistance of a qualified bike fit expert, especially if you experience pain or discomfort after set up and use. If necessary, your RITCHEY dealer can help you with our FIT LOGIC BY RITCHEY program that gives you an overview of the available RITCHEY products and sizes finding the ideal seating position for you that satisfies your needs.

Aheadset®-Stems

Readjusting the Aheadset® by Using Spacers

On bikes using a threadless headset system, or Aheadset®-system, the stem is an integral part of the headset. To modify the seating position the stem can be dismounted and re-mounted. Subsequently, the headset must be re-adjusted (see chapter **"Adjusting the Headset"**).





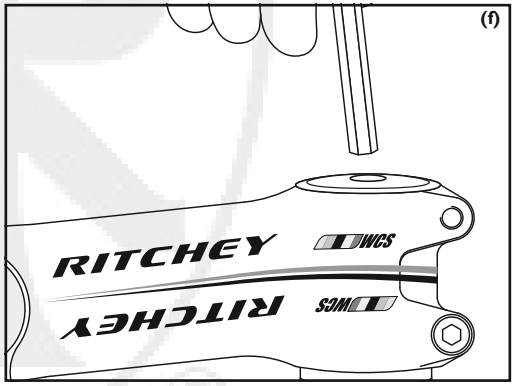
The vertical position of the stem is determined by the arrangement of the spacers. In the case of flip-flop models **(e)** it is also possible to reverse the stem in order to achieve a higher or lower position of the handlebars.

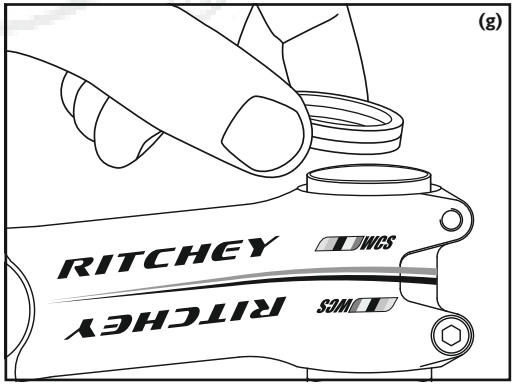
Loosen the headset cap bolt at the top of the fork steerer tube **(f)**. This cap serves to adjust the bearing preload. Remove the cap and loosen the stem's steerer clamp bolts, then pull the stem up and off the steerer tube. Now you can remove the spacers. Reposition the spacers on the steerer tube above and below the stem **(g)** in order to position the handlebar at the desired height.

Check the reliable fit of all components, as described above.

Keep in mind not to position more than 30 mm spacers below the stem.

If you want to reduce the number of spacers, you have to shorten the steerer tube. This shortening is irreversible. Cutting the steerer tube is a job for a skilled mechanic. Have this work performed only after you have found the ideal position. Instead of shortening the steerer tube you have also the option to modify the arrangement of the spacers. Make a test ride and place the equal number of spacers you have removed from below the stem above the stem and vice versa.





Adjustable Stems

In the case of adjustable Aheadset®-stems **(a)** you can vary the height of the handlebars by changing the tilt of the front part of the stem.

After you have changed the height of the handlebars, make sure to also re-adjust the headset. If you are not sure whether you can perform this adjustment, ask your RITCHEY dealer for help.

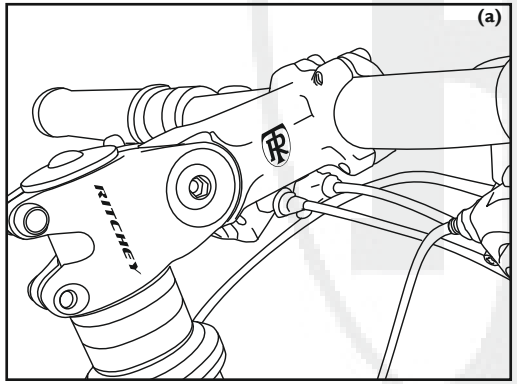
Release the lateral bolt **(b)** for the angle adjustment until the ratchet mechanism disengages and open the steerer tube clamping. Undo both parts of the clamping so that you are able to bring the stem into a new position **(c)**. Re-assemble both parts by making sure the ratchet mechanism interlocks properly and remount the bolt. Retighten it to the recommended torque value **(d)**.

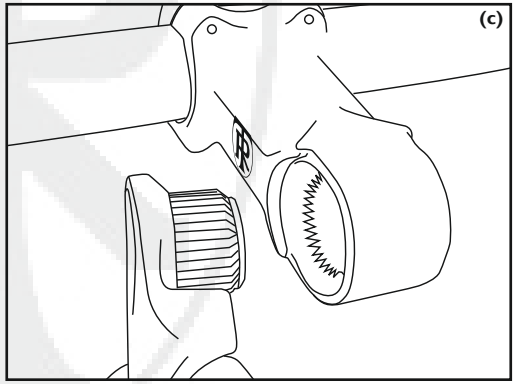
When you have determined the position of your stem, you should also change the position of the handlebars, as described in chapter **"Installing the Handlebars"**. To do so, release the bolts of the stem's faceplate and turn the handlebars. Retighten the bolts to a maximum torque value of 5 Nm.

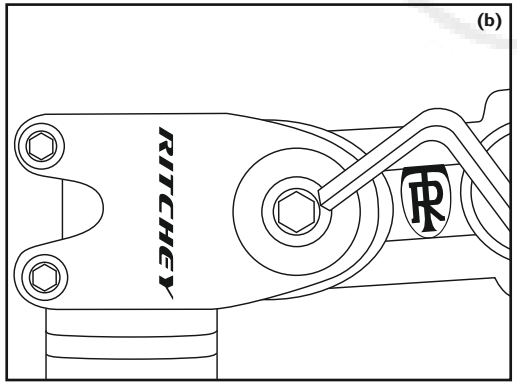
Adjust the headset, as described in chapter **"Adjusting the Headset"**.

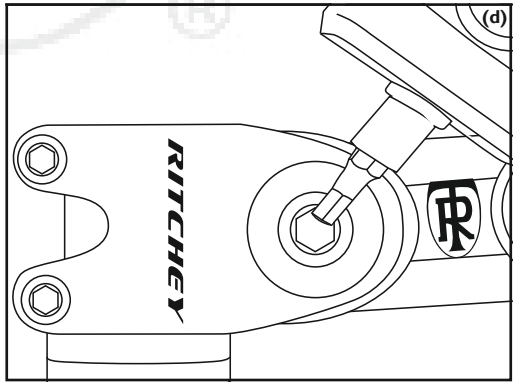
Keep in mind that when changing the position of the stem you also change the position of the handlebars including brake and shift levers and bar ends, if mounted. Readjust the position of the handlebars, as described in chapter **"Installing the Handlebars"**.

Make sure to properly tigthen the bolts of stem and handlebars. Non-observing the prescribed torque settings can result in handlebar or stem failure.









C260 Stems

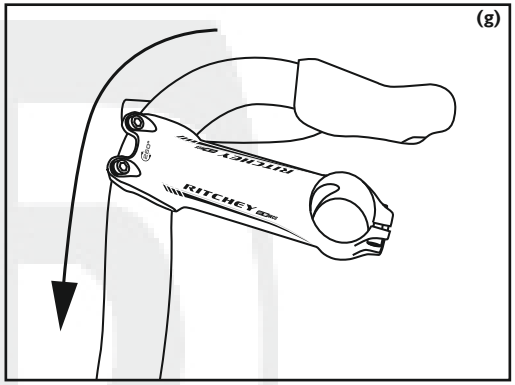
We strongly recommend using RITCHEY stems only with RITCHEY handlebars to ensure optimum performance and durability. Although RITCHEY C260 stems are designed to be theoretically compatible with most handlebars, some makes/models may not fit. **Risk of Accident!**

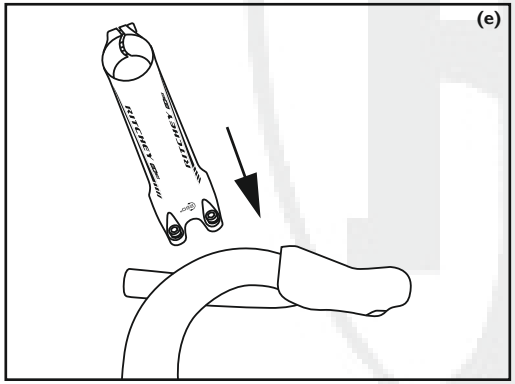
Do not force the stem onto a bar, as scratching or damage may occur.

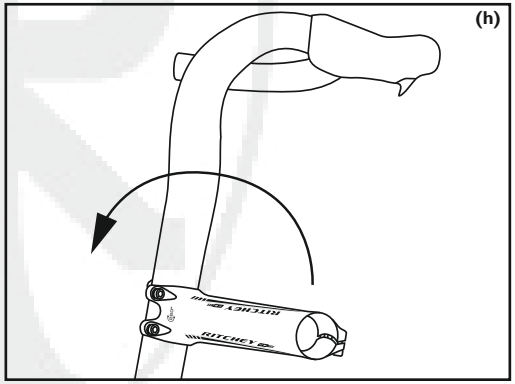
Stem to Bar Installation

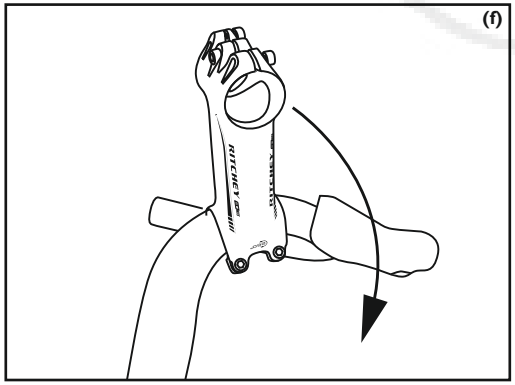
A) Road bar with ergonomic top section

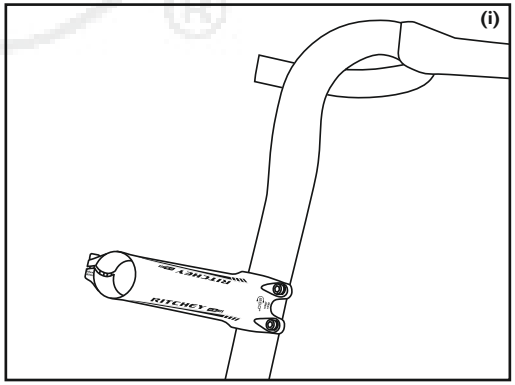
1) Remove the faceplate and the bolts. Peel the bar tape back to the hoods, if necessary. Insert the stem onto the bar near the outer portion of the bend **(e)**.
2) Rotate the stem body by 180 degrees to face inward towards the center of the bar **(f)**.
3) Carefully work the stem towards the center of the bar to avoid damage. Do not use excessive force to compensate for the increased friction that may occur **(g)**.
4) Carefully slide the stem over the center section of the bar and rotate the stem by 180 degrees to the proper riding position **(h)**.
5) Adjust the stem in the center of the clamp according to your preferred riding position and torque the bolts to the specifications indicated in chapter **"Stem Tightening"(i)**.











B) Standard road bars

1) Remove the faceplate and the bolts. Peel the bar tape back to the hoods, if necessary. Insert the stem onto the bar on either side of the oversize center section of the bar **(a)**.

2) Carefully slide the stem over the center section of the bar. Adjust the stem in the center of the clamp according to your preferred riding position and torque the bolts to the specifications indicated in chapter **"Stem Tightening" (b)**.

C) Mountain flat / rise bar

1) Remove the faceplate and the bolts. Insert the stem onto the bar on either side of the oversize center section of the bar **(c)**.

2) Carefully slide the stem over the center section of the bar. Adjust the stem in the center of the clamp according to your preferred riding position and torque the bolts to the specifications indicated in chapter **"Stem Tightening" (d)**.

Stem Tightening

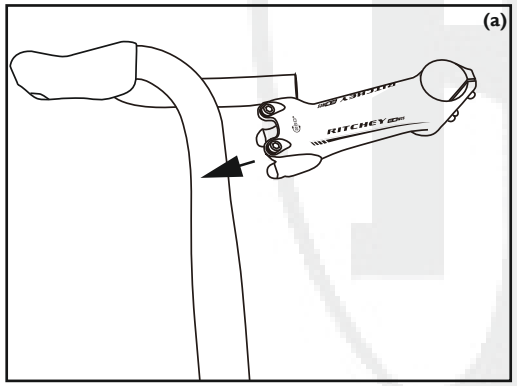
Use a torque wrench to ensure the bolts are secured to the proper torque specifications

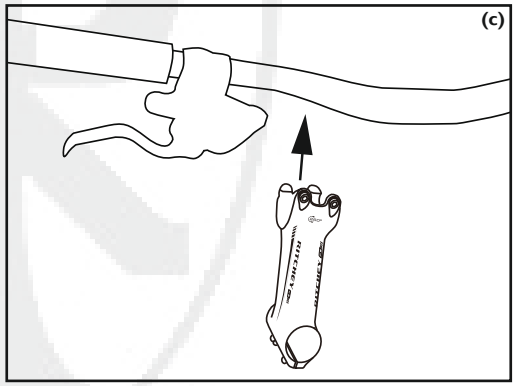
Step 1

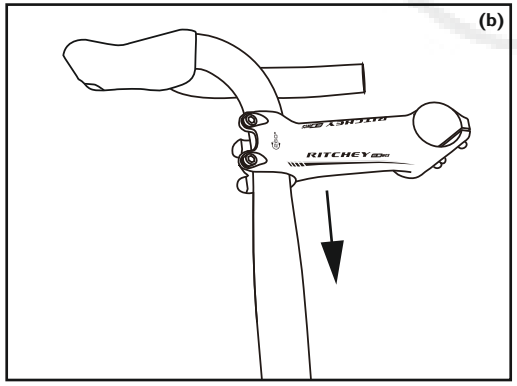
With the bar and stem mounted on the bike adjust them according to your preferred riding position. Start by tightening the steerer clamp bolts gently and evenly and only then to a maximum torque of 5 Nm **(e)**.

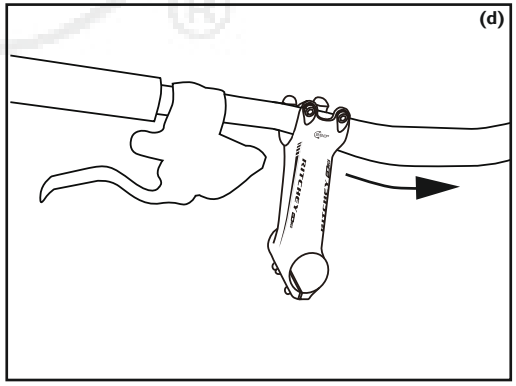
Step 2

Start by tightening the handlebar clamp bolts gently and evenly to ensure the upper and lower gap between stem and faceplate is identical in width. Retighten the bolts only then in an alternating pattern **(f)** to a maximum torque value of 5 Nm.









Installing and Adjusting Aero Bars

WCS Carbon Hammerhead TT Base Bar

The WCS Carbon Hammerhead TT Base Bar is installed to regular stems, as described in section **"Installing the Handlebars"**. Make sure to install the handlebars in parallel to the ground or with a slight upward tilt.

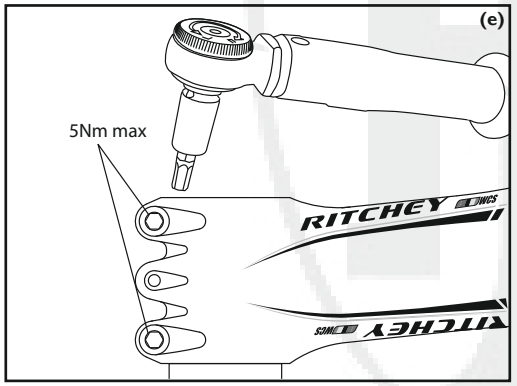
It is recommended to opt for a shorter stem than you would use with a regular road bar. Take your time to find out the ideal position for you and ask your RITCHEY dealer for advice.

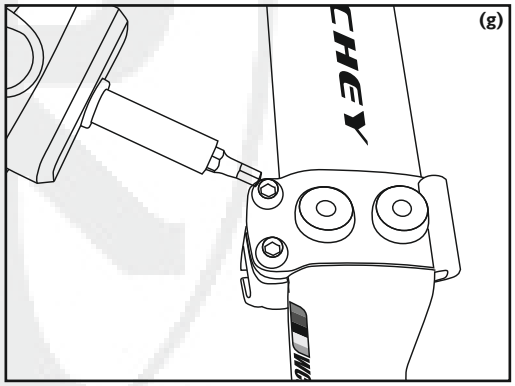
The Hammerhead base bar is not compatible with Shimano Dual Control, Campagnolo Ergopower or SRAM Double Tap brake/shift levers. Specific time trial brake levers and bar end shifters are not necessary!

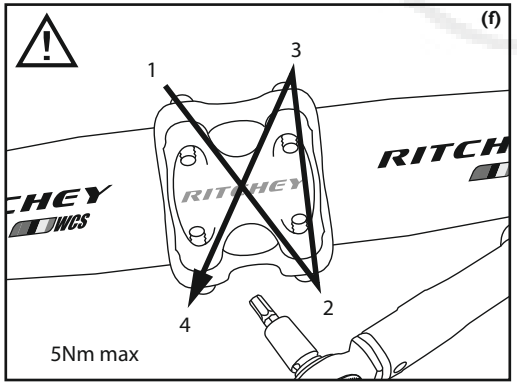
Release the clamping bolts at the bottom side of the clamp devices and slide the extensions into these clamps. Bent extensions should be installed with the RITCHEY logo outside. The extensions can be moved towards the front or backwards until you are comfortable in your desired seating position. Make sure the extensions are always fully inserted in the clamps. Tighten the clamping bolts of the extensions only slightly so that they can still be moved into the desired position.

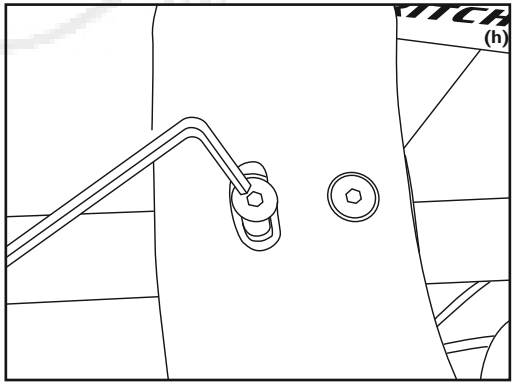
Remove both carbon arm rests and release the clamping bolts of both handlebar clamp devices. Remove the clamp devices, install them in the desired position at the elliptical part of the base bar and retighten the clamping bolts to a maximum torque value of 5 Nm **(g)**.

Subsequently, install the carbon arm rests on the clamp devices and slightly tighten their bolts. Determine the optimal angle of the carbon arm rests and tighten the bolts to a maximum torque of 5 Nm **(h)**.









Once you have found the optimal seating position, tighten the clamping bolts of the extensions in half turns until the extensions are tight and can no longer be turned **(a)**. Never exceed the prescribed torque value of 5 Nm.

Finish by removing the protective film from the rest pads and fix them in the desired position on the carbon arm rests.

The brake cables run over the first centimetres through the handlebars before they come out of the respective hole. In the case of bar end shifters the shift cables are conducted entirely along the extensions.

Read the user manual of the brake and shift lever manufacturer before you install them according to the instructions.

After you have found your final seating position it may be that you have to shorten the extensions. This is a job you should have performed by your RITCHEY dealer.

Make sure the extensions are clamped over the entire possible length. Otherwise the aero bars may fail during use. **Risk of Accident**!

Wrap the RITCHEY bar tape around the grip area of the aero extensions to ensure a firm grip during riding.

WCS Carbon Interval Base Bar

Install the Interval Base Bar, as described in chapter **"Installing the Handlebars"**. Make sure the straight grip part of the handlebars is about in parallel to the ground or with a slight upward tilt.

The Interval Base Bar is not compatible with Shimano Dual Control, Campagnolo Ergopower or SRAM Double Tap brake/shift levers. Specific time trial brake levers and bar end shifters are not necessary!

The brake cables run over the first centimetres through the handlebars before they come out of the respective hole. In the case of bar end shifters the shift cables are conducted entirely along the extensions.

Pro Base Bar

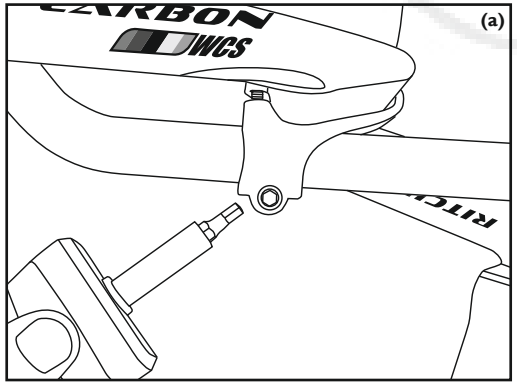
Install the Pro Base Bar, as described in chapter **"Installing the Handlebars"**. Make sure the straight grip part of the handlebars is about in parallel to the ground or with a slight upward tilt.

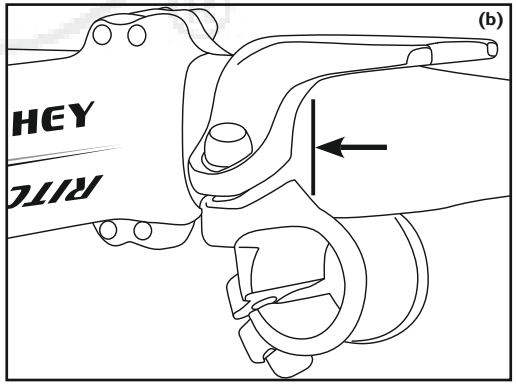
The Pro Base Bar is compatible with Shimano Dual Control, Campagnolo Ergopower or SRAM Double Tap brake/shift levers. Most specific brake/shift levers are also compatible with the Interval Base Bar, whereas most bar end shifters are compatible with RITCHEY aero extensions. Read the respective user manual to be on the safe side.

The brake cables should run along the front side of the handlebars, as usual. The shift cables can enter through the opening (outside) into the bar bend, before coming out through the opening on the bottom side. As an alternative the shift cables can also be conducted in parallel to the brake cables. In the case of bar end shifters the shift cables are conducted entirely along the extensions.

The WCS Carbon Interval Base Bar and the Pro Base Bar can be combined with the arm rests **WCS "Wedge" Carbon-Alloy** and **WCS "Sliver" Carbon-Alloy.**

Read the user manual of the brake and shift lever manufacturer before you install the controls according to the instructions.





Installing the Arm Rests WCS "Wedge" Carbon-Alloy

Release the handlebar clamping bolts of the Wedge clamp devices. Disassemble the handlebar clamps in its two components, position them around the cylindrical centre part of the handlebars **(b)**, engage the front parts and slightly tighten the handlebar clamping bolts. Make sure the platforms for the carbon arm rests point to the outside and the clamping bolts for the extensions under the handlebars show to the inside.

Release the clamping bolts for the extensions and slide the extensions into these clamps. Bent extensions should be installed with the RITCHEY logo outside. The extensions can be moved towards the front or backwards until you are comfortable in your desired seating position. Make sure the extensions are always fully inserted in the clamps. Tighten the clamping bolts of the extensions only slightly so that they can still be moved into the desired position.

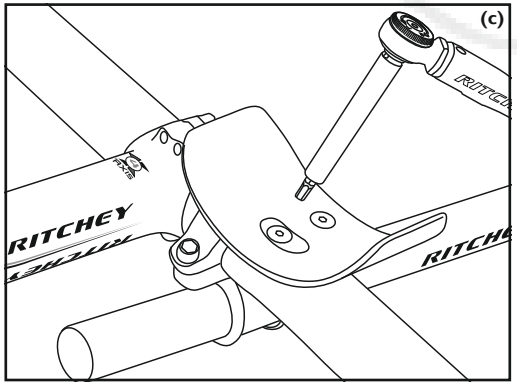
Remove both carbon arm rests and determine their optimal position. You can determine the distance between your arms by means of the front bolts. The rear bolt is intended to vary the angle of your arm position. Retighten the bolts to a maximum torque value of 3 to 4 Nm **(c)**.

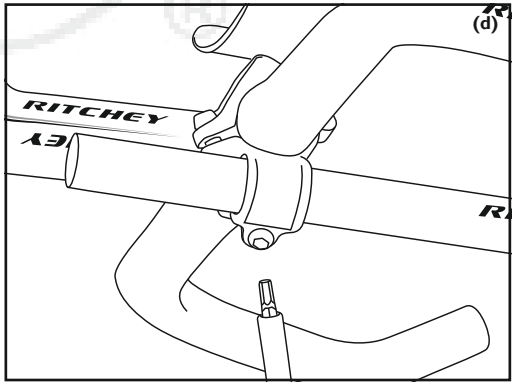
Once you have found the optimal seating position tighten the handlebar clamping bolts of the wedge clamp device to a maximum torque value of 6 to 7 Nm. Tighten the clamping bolts of the extensions in half turns until the extensions are tight and can no longer be turned **(d)**. Never exceed the prescribed maximum torque value of 4 to 5 Nm.

Finish by removing the protective film from the rest pads and fix them in the desired position on the carbon arm rests.

Once you have found your ideal seating position after a test ride, mark both extensions with a touch-up stick where they must be shortened. Remove both extensions and cut them off at the mark. Deburr the cutting edges and reinstall the extensions, as above described.

Make sure the extensions are clamped over the entire possible length of the "Wedge" clamps. Otherwise the aero bars may fail during use. **Risk of Accident!**





Installing the Arm Rests WCS "Sliver" Carbon-Alloy

Release the handlebar clamping bolts of the Sliver clamp devices. Remove the bottom brackets of both devices, position the arm rests and brackets around the cylindrical centre part of the handlebars **(a)** and slightly tighten the handlebar clamping bolts. Make sure the platforms for the carbon arm rests and the clamping bolts for the extensions under the handlebars point to the outside.

Release the clamping bolts for the extension clamps and slide the extensions until stop into these clamps. Bent extensions should be installed with the RITCHEY logo outside. The extensions cannot be moved towards the front or backwards until you are comfortable in your desired seating position. If necessary, the extensions may be shortened. This is a job you should have performed by your RITCHEY dealer.

Remove both carbon arm rests and determine their optimal position. The "Sliver" model offers you five possibilities of adjusting the distance between your arms. It does not allow changes to the arm angle! Bring the arm rests into the desired position and retighten both bolts to a maximum torque value of 3 to 4 Nm **(b)**.

Once you have found the optimal seating position tighten the handlebar clamping bolts of the Sliver clamp device to a maximum torque value of 6 to 7 Nm. Make sure the clamping slots in the front and rear are identical in width. Tighten the clamping bolts of the extensions in half turns until the extensions are tight and can no longer be turned **(c)**. Never exceed the prescribed maximum torque value of 3 to 4 Nm.

Finish by removing the protective film from the rest pads and fix them in the desired position on the carbon arm rests.

Make sure the extensions are fitted until stop in the "Sliver" clamps. Otherwise the aero bars may fail during use. **Risk of Accident!**

Make sure the clamp devices are clamped over their entire width on the cylindrical centre part of the handlebars and not to far outside **(a+d)**. This is the only way of ensuring a durable and secure fit of the aero extensions. **Risk of Accident!**

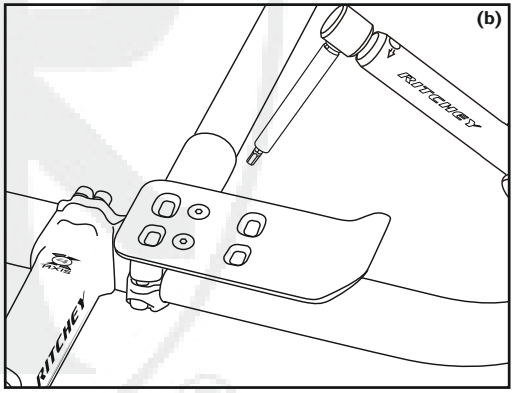
RITCHEY offers four different extension models: two models made of carbon (**Carbon TT S-Bend Extension 340 mm** and **Carbon TT 376 mm Extension Straight**) and two made of aluminum (**Pro Alloy TT Extension S-Bend 400 mm** und **WCS Alloy TT Extension L-Bend**).

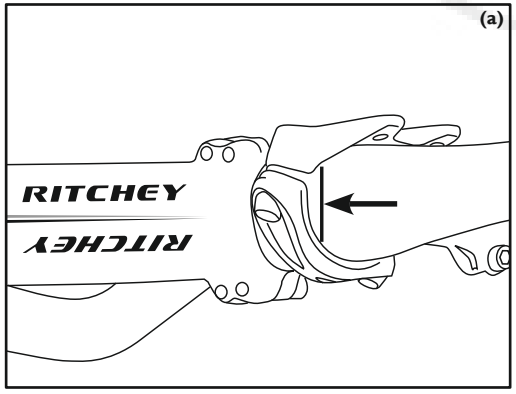
After you have found your final seating position it may be that you have to shorten the extensions. This is a job you should have performed by your RITCHEY dealer.

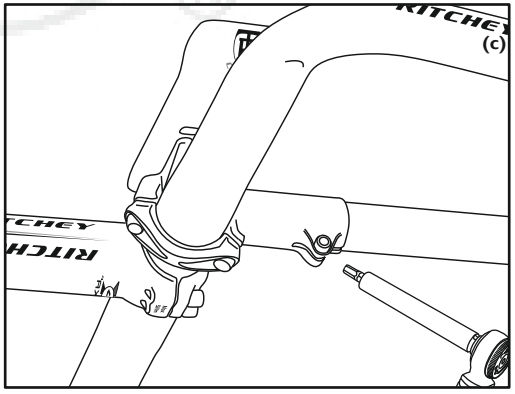
On RITCHEY carbon extensions the aluminium sleeve is designed for mounting the shift levers. Do not shorten in this area!

Wrap the RITCHEY bar tape around the grip area of the aero extensions to ensure a firm grip during riding.

Make sure the clamping areas are absolutely free of grease and other lubricants, especially when the clamping surfaces are made of carbon! When you install carbon components, apply RITCHEY Liquide Torque to interconnecting surfaces to increase friction.







Grips and Bar Tape

Grips and bar tapes not only provide comfort, but also have a very important secondary function: they ensure that your hands' movements communicate clearly with the steering components!

Make sure your set of grips and the bar tape are in good, functional condition. Replace worn through or extremely dirty grips and bar tapes immediately.

Installing the Grips

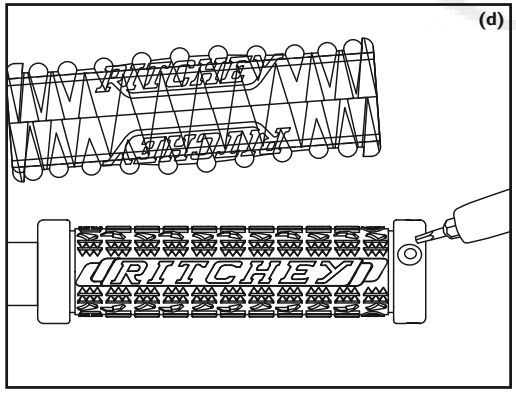
For a reliable fit without play RITCHEY grips must be mounted on handlebars that are free of oil and grease.

1) Grips with bolt locking can be slided easily on the handlebars. Verify that the clamping mechanism is at the end of the handlebars. Slide the grip into the correct position on the handlebars and tighten the bolts to ensure a tight fit of the grip. Never exceed the maximum torque value of 3 Nm **(d)**.
2) All other RITCHEY grips adhere to the handlebars due to friction between bars and grip. The easiest way to mount the grips is with compressed air. Inflate the grips with air and slide them onto the handlebars. If you don't have compressed air, please contact your RITCHEY dealer to perform this job for you.

We discourage the use of slip agents, such as hairspray etc., as they can cause the grips to loosen during use.

All types of grips that are designed with open ends should be fitted with the enclosed plugs (into the ends of the handlebars). This will avoid or at least reduce potential damage to the handlebars and, more importantly, injuries in the case of a crash.

Make sure the handlebars are free of lubricants and do not use chemical fluids to mount the grips!



Wrapping the Bar Tape

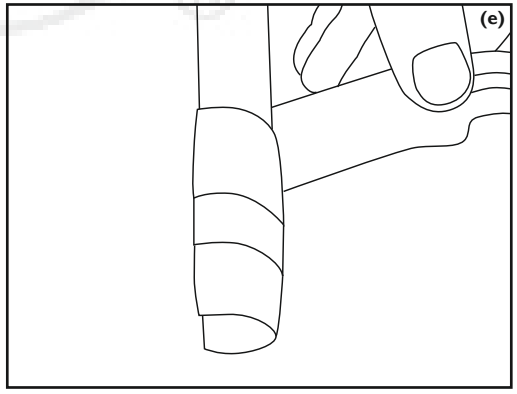
Clean the handlebars of any dirt, adhesive residues or grease.

Start wrapping the bar at the bottom, i.e. at the open end of the drop. The first wrap around the bar should be positioned that half of the tape is overlapping the end of the bar **(e)**.

Proceed inward/upward with the tape diagonal and partly overlapping the previous wrap, and so on. Hold the tape under tension during the complete wrapping process and remove the paper backing from the adhesive as you go.

Position a short piece of bar tape on the rear side of the brake lever and over its clamp around the bar so you will not have an "unwrapped area" as you wrap past the lever. Continue wrapping the tape until you reach the bulge/clamp area. Finish by taping the final wrap of the bar tape with insulating tape.

Tuck the overlapping bar tape you left at the beginning into the open end of the bar and insert a plug. Repeat this process on the other side.



Warranty Terms

Under European consumer law, the purchaser has full statutory warranty rights within the first two years from date of purchase. In North America, these rights apply to the first year from the date of purchase. According to these laws, your dealer is responsible for ensuring the product is free of defects that could cause premature wear from normal use.

The two year warranty law is only valid in countries where European (EU) regulations apply! Please ask your bicycle dealer about the regulations in your country.

Warranty claims will only be accepted, if the bicycle has been used solely for its intended purpose (see section, **"Before Your First Ride"**).

It does not cover damage resulting from wear (worn through bar tapes and grips), neglect (insufficient care and maintenance), accidents, overstress caused by overloading, incorrect installation, improper treatment or as a result of changes to the components.

Be sure to strictly follow all assembly instructions in this manual as well as all additional instructions provided by the manufacturers of products used in conjunction with RITCHEY products, especially torque values and the prescribed maintenance instructions. Observe all user manuals that may be enclosed with RITCHEY products with regard to behavioral procedures and control procedures that are mentioned in this manual. But also observe any other manuals that may be enclosed with RITCHEY products. Keep the user manuals of all safety-relevant components (handlebars, bar ends, etc.) for your records and future reference.

Your direct contact with regard to all issues outlined in this manual and corresponding instructions is your local RITCHEY dealer, who is qualified to answer your questions. To handle your claim you need to present your receipt.

In the event of a defect or if you have a warranty issue, please contact the dealer who sold you the bicycle component in question. RITCHEY has exclusive agreements with all authorized dealers to handle potential warranty claims. If you purchase a RITCHEY product from an unauthorized RITCHEY dealer, e.g. from an internet auction site, the warranty granted by RITCHEY becomes void, so you must seek resolution with the reseller who sold you the product.

A Note on Wear

Bicycle components are subject to wear due to normal and proper use. The rate of wear will depend on care and maintenance, the bicycle usage and the environmental conditions, such as rain, mud, dust, and sand. Some components require regular care and maintenance, but despite the best maintenance program, all components will eventually reach the end of their service life, depending on conditions and intensity of use.

The following RITCHEY components are especially subject to wear due to the nature of their intended use and not covered for wear under this warranty:

Grips and bar tape that are subject to compression, abrasion and contamination.

Manufacturer's Guarantee

RITCHEY products have been developed and manufactured with great care and have gone through numerous testing controls. Our products are examined as part of our internal quality control process to meet strict standards as well as by external, independent test laboratories.

For the EU market we grant, independent of legal regulation, a voluntary guarantee that your RITCHEY product is free of manufacturing and processing defects for two years from the date of purchase.

For the North American market we grant, independent of legal regulation, a voluntary guarantee, that your RITCHEY product is free of manufacturing and processing defects for one year from date of purchase. (Exeption: grips and bar tape, as above described).

The manufacturer's guarantee only applies to claims made by the initial buyer, who must present the purchase receipt with date of purchase, dealer address and model number. Guarantee claims will only be accepted, if the bicycle has been used in accordance with the intended use of RITCHEY products.

This guarantee does not cover damage resulting from:

- wear
- neglect (insufficient care and maintenance)
- accidents
- overstress caused by overloading
- incorrect installation or improper treatment
- changes or modifications to the component (e.g.: cutting the handlebars).

The instructions of this and all other RITCHEY manuals are drawn up carefully to maximize the service life of RITCHEY products. Any guarantee is void, if installation instructions are ignored and/or if regular inspection and maintenance intervals are not observed.

In the event of a warranty claim, RITCHEY reserves the right to provide all or part of the current successor model in an available colour or if such part is not available, a higher grade model to remedy the claim. The guarantee does not cover assembly, refitting costs or any new accessories that may be required (e.g. different dimension parts).

The guarantee does not cover labour and transport costs, nor does it cover follow-up costs resulting from defects.

Your direct contact for any issue is your RITCHEY dealer who is authorized to respond to your inquiries.

RITCHEY International
Via Cantonale 2
CH- 6916 Grancia-Lugano

European Authorized Representative
Obelis s.a
Bd. Général Wahis 53
1030 Brussels, BELGIUM

RITCHEY Corporate HQ's
620 Spice Island Drive
Sparks, NV 89431

RITCHEY Design Inc.
Sales & Warranty Office
575 Old County Road
San Carlos, CA 94070

RITCHEY Design Inc. Taiwan Branch
22-1, #123 Chungang Rd. Sec 3
Taichung 407
Taiwan R.O.C.

In case of inquiries, contact your national distributor at www.ritcheylogic.com.

Technical details in the text and illustrations of this manual are subject to change.

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Concept and text:
Zedler – Institut für Fahrradtechnik und -Sicherheit GmbH
www.zedler.de
Edition 4, October 2012

NEKKAR PLUS

NEKKAR PLUS

WEIGHT/ 310 g
SIZE/ W 134 x L 280 mm
RAIL/ FeC Alloy ø 7 mm
USE/ Road/Offroad

COLOUR/ ● ○

idmatch
IDENTITY MATCHING SYSTEM

FIND YOUR IDEAL SADDLE WITH IDMATCH

#1 STEP GENERAL PARAMETERS
#2 STEP INTERTROCHANTERIC DISTANCE
#3 STEP THIGH CIRCUMFERENCE
#4 STEP PELVIC ROTATION

4 MAIN STEPS

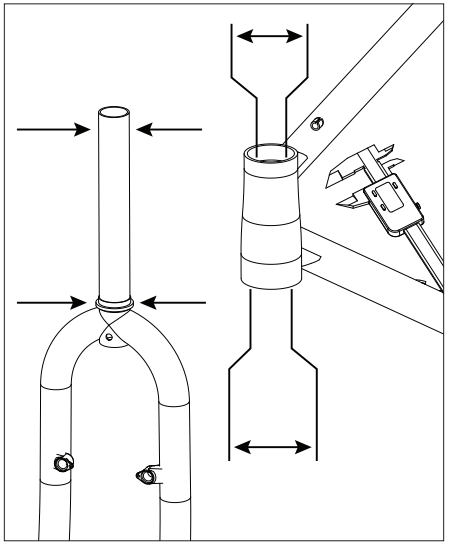
PELVIC CALIPERS
METRIC TAPE
PELVIC INCLINOMETER

1 RESULT

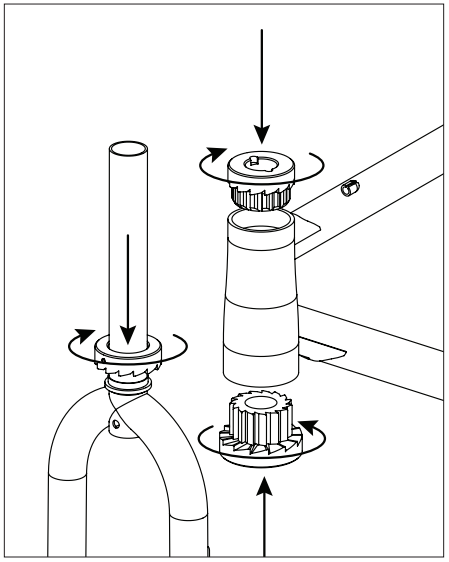
www. selleitalia.com
www.idmatch.ch

FORTY INSTALLATION GUIDE | EC AND ZS ASSEMBLIES

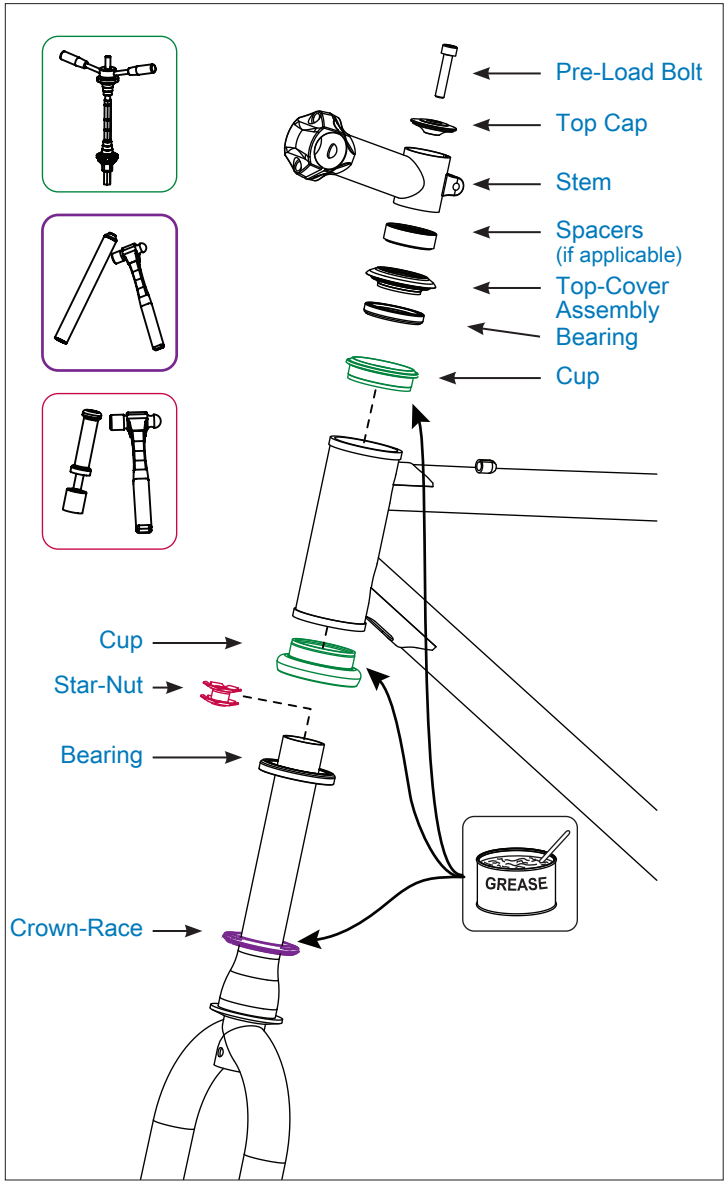
1 CONFIRM MEASUREMENTS
WWW.HEADSETFITFINDER.COM



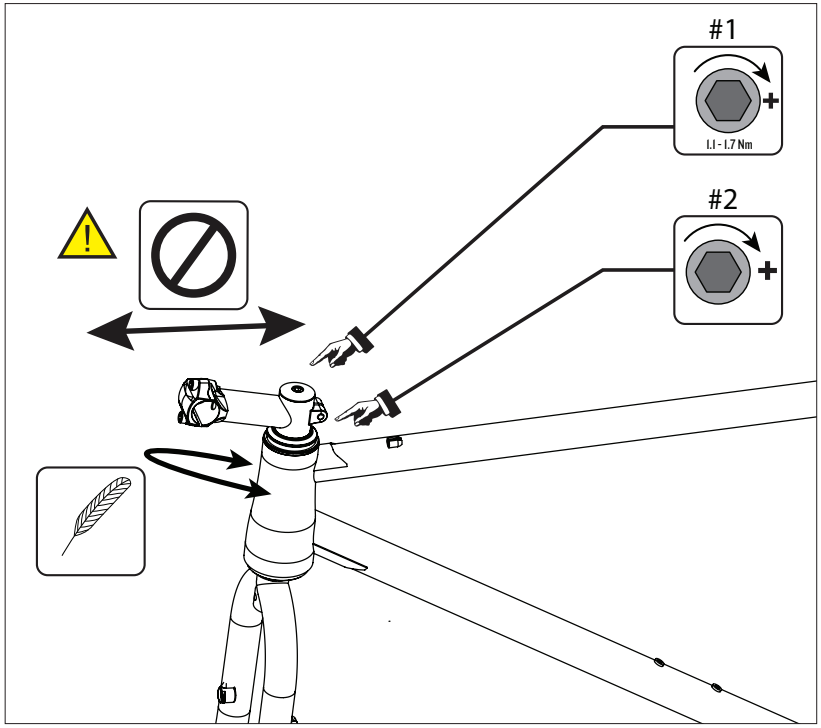
2 PREPARE FRAME & FORK
WWW.CANECREEK.COM/TECH-CENTER



3 INSTALL AND ASSEMBLE HEADSET PARTS
WWW.CANECREEK.COM/TECH-CENTER



4 ADJUST HEADSET
WWW.CANECREEK.COM/TECH-CENTER



TIP:
A LITTLE WATERPROOF GREASE ON THE CROWN RACE SEAL AND TOP COVER SEAL WILL KEEP EVERYTHING TURNING SMOOTHLY.

PROFESSIONAL FRAME PREPARATION AND HEADSET INSTALLATION RECOMMENDED.
PROFESSIONAL FRAME VORBEREITUNG UND HEADSET-INSTALLATION EMPFOHLEN
LA PREPARAZIONE PROFESSIONALE E L'INSTALLAZIONE TELAIO AURICOLARE RACCOMANDATO
LA PRÉPARATION DU CADRE PROFESSIONNEL ET L'INSTALLATION CASQUE RECOMMANDÉ
专业结构安装准备和耳机推荐

CANE CREEK® Cane Creek Cycling Components | 355 Cane Creek Rd, Fletcher, NC 28732 | 800.234.2725 | info@canecreek.com | canecreek.com

WARRANTY

Cane Creek Cycling Components warrants its 40-Series headsets for a period of 1 year from the date of original purchase. Any headset found to be defective in materials or workmanship will be repaired or replaced at the discretion of Cane Creek. This warranty applies only to the original owner.

This warranty does not cover damage or failure resulting from misuse, abuse, alteration, neglect, wear and tear, crash or impact, lack of maintenance or other conditions judged by Cane Creek to be abnormal, excessive or improper. It is mandatory that a Return Authorization Number (RA#) be obtained by contacting Cane Creek before any product is returned.

Warranty claims outside of the United States can be made by contacting the appropriate Cane Creek distributor.

⚠ WARNING: Many bicycle service and repair tasks require special knowledge and tools. In order to help minimize the chances of an accident and possible injury, it is critical that you have any installation, repair or maintenance performed by a professional bicycle mechanic or dealer. Do not begin any adjustments or service on your bicycle yourself until you have learned from your mechanic or dealer how to properly complete them. Improper adjustment or service may result in damage to the bicycle or an accident, which can cause serious injury or death.

Equally important is that your individual maintenance requirements will be determined by everything from your riding style to geographic location. Consult your dealer or mechanic for help in determining your maintenance requirements. Like any mechanical device, a bicycle and its components are subject to wear and stress. Different materials and mechanisms wear or fatigue from stress at different rates and have different life cycles. If a component's life cycle is exceeded, the component can suddenly and catastrophically fail, causing serious injury or death to the rider. Scratches, cracks and discoloration are signs of stress-caused fatigue and indicate that a part is at the end of its useful life and needs to be replaced. While the materials and workmanship of bicycle components may be covered by a warranty for a specified period of time by the manufacturer, this is no guarantee that the product will last the term of the warranty. Product life is often related to the kind of riding you do and to the treatment to which you submit the product.
A component warranty is not meant to suggest that the component cannot be broken or will last forever.

Before installing any component or accessory ensure that it is compatible with your bicycle by checking with your dealer.

GARANTIE

Cane Creek Cycling Components garantiert, dass seine 40-Serie Headsets für einen Zeitraum von 1 Jahre ab dem Kaufdatum. Jede Headset mangelhaft befunden werden Material-oder Herstellungsfehler repariert oder ersetzt nach dem Ermessen des Cane Creek. Diese Garantie gilt nur für den Erstbesitzer.

Diese Garantie gilt nicht für Schäden oder Ausfälle aufgrund von Missbrauch, Veränderung, Vernachlässigung, Abnutzung, Sturz oder Aufprall mangelnder Wartung oder anderen Bedingungen von Cane Creek beurteilt werden abnorme, übermäßiger oder unsachgemäßer. Es ist zwingend, dass ein Return Authorization Number (RA #), indem Sie Cane Creek, bevor ein Produkt zurückgegeben erhalten werden.

Gewährleistungsansprüche außerhalb der Vereinigten Staaten kann durch Kontaktaufnahme mit den entsprechenden Cane Creek Händler vorgenommen werden.

⚠ ACHTUNG: Viele Fahrrad-Service und Reparatur Aufgaben erfordern spezielle Kenntnisse und Werkzeuge. Um zu minimieren die Wahrscheinlichkeit eines Unfalls und mögliche Verletzungen, ist es entscheidend, dass alle Installations-, Reparatur-oder Wartungsarbeiten von einem Fachmann Fahrradmechaniker oder Händler durchgeführt haben. Beginnen Sie mit etwaigen Anpassungen oder Reparaturen an Ihrem Fahrrad selbst, bis Sie Ihren Mechaniker oder Händler, wie man richtig komplett ihnen gelernt haben. Eine falsche Einstellung oder Wartung kann zu Schäden am Fahrrad oder einem Unfall, der zu schweren Verletzungen oder Tod verursachen können.

Ebenso wichtig ist, dass Ihre individuellen Wartungsaufwand durch alles aus Ihren Fahrstil der geographischen Lage festgestellt werden sollen. Fragen Sie Ihren Händler oder einer Werkstatt für Hilfe bei der Bestimmung Ihrer Wartungsaufwand.Wie jedes mechanische Gerät, ein Fahrrad und seine Komponenten dem Verschleiß unterliegen und stress. Different Materialien und Mechanismen Abnutzung oder Ermüdung von Stress bei unterschiedlichen Geschwindigkeiten und unterschiedlichen Lebenszyklen. Wenn eine Komponente * s Lebenszyklus überschritten wird, kann das Bauteil plötzlich und katastrophal ausfallen, was zu schweren Verletzungen oder zum Tod des Fahrers. Kratzer, Risse und Verfärbungen sind Anzeichen von Stressbedingten Müdigkeit und zeigen, dass ein Teil am Ende ihrer Nutzungsdauer ist und ersetzt werden muss. Während die Materialien und Verarbeitung von Fahrradkomponenten eine Garantie für eine bestimmte Zeit vom Hersteller gedeckt werden können, ist dies keine Garantie dafür, dass das Produkt die Laufzeit der Garantie dauern. Größe und Leben wird oft auf die Art des Reitens Sie tun und auf die Behandlung an der Sie den Produkt passt. Eine Komponente Garantie ist nicht dazu gedacht, lassen vermuten, dass die Komponente kann nicht gebrochen werden oder wird ewig dauern.

Vor der Installation einer Komponente oder Zubehör dafür, dass es mit Ihrem Fahrrad durch Rücksprache mit Ihrem Händler ist.

GARANTÍA

Cane Creek Ciclismo componentes garantiza que sus auriculares de 40 Series por un período de 1 años a partir de la fecha de compra original. Cualquier auricular que se encuentre defectuoso en materiales o mano de obra, será reparado o reemplazado, a discreción de Cane Creek. Esta garantía se aplica solamente al propietario original.

Esta garantía no cubre daños ocasionados por mal uso, abuso, alteración, negligencia, desgaste, choque o impacto, la falta de mantenimiento u otras condiciones juzgado por Cane Creek para ser anormal, excesiva o inadecuada. Es obligatorio que un Número de Autorización de Devolución (RA #) obtener poniéndose en contacto con Cane Creek antes de regresar cualquier producto.

Los reclamos de garantía fuera de los Estados Unidos pueden hacer poniéndose en contacto con el distribuidor adecuado de caña Creek.

⚠ ADVERTENCIA: Muchas tareas de bicicletas y reparación requieren conocimientos especiales y herramientas. Con el fin de ayudar a minimizar las posibilidades de un accidente y posibles lesiones, es fundamental que haya ningún tipo de instalación, reparación o mantenimiento realizado por un mecánico o vendedor de bicicletas. No realice ningún ajuste o servicio en su bicicleta hasta que haya consultado con su mecánico o vendedor cómo hacerlo apropiadamente.ajuste o mantenimiento inadecuado puede causar daños en la bicicleta o un accidente, que puede causar lesiones graves o la muerte.

Igualmente importante es que sus necesidades de mantenimiento individuales será determinado por el todo, desde su estilo de conducción a la ubicación geográfica. Consulte a su distribuidor o mecánico para ayudar a determinar sus necesidades de mantenimiento. Como cualquier dispositivo mecánico, una bicicleta y sus componentes están sujetos a desgaste y materiales stress. Different y mecanismos de desgaste o fatiga de la tensión a un ritmo diferente y tienen diferentes ciclos de vida. Si un componente * s del ciclo de vida se supera, el componente puede fallar de repente y catastróficamente, causando lesiones graves o la muerte del ciclista. Arañazos, grietas y decoloración son señales de estrés, la fatiga causada e indican que una parte se encuentra al final de su vida útil y necesita ser reemplazado. Mientras que los materiales y mano de obra de los componentes de la bicicleta puede ser cubierto por una garantía por un período de tiempo especificado por el fabricante, esto no garantiza que el producto tendrá una duración de la vigencia de la garantía. Vida del producto es a menudo relacionado con el tipo de conducción que haces y que el tratamiento al que enviar el producto.Una garantía de componentes no se pretende sugerir que el componente no puede ser roto o va a durar para siempre.

Antes de instalar cualquier componente o accesorio, asegúrese de que es compatible con su bicicleta por consultar a su distribuidor.

GARANTIE

Cane Creek Cycling Components garantit que ses casques 40-Series pour une période de 1 ans de la date d'achat originale. Tout casque s'avère défectueux en matériaux ou de fabrication sera remplacé ou réparé à la discrétion de Cane Creek.Cette garantie s'applique uniquement au propriétaire original.

Cette garantie ne couvre pas les dommages ou pannes causés par un mauvais usage, abus, négligence, à l'usure, accident ou de choc, le manque d'entretien ou d'autres conditions jugées par Cane Creek d'être anormale, excessive ou inappropriée. Il est obligatoire qu'un numéro d'autorisation (RA #) peuvent être obtenues en communiquant avec Cane Creek avant tout retour de produit.

Toute demande de garantie en dehors des États-Unis peuvent être faites en contactant le cas échéant Cane Creek distributeur.

⚠ ATTENTION: Les opérations de service et de réparation de bicyclettes Beaucoup exigent des connaissances et des outils spéciaux. Afin d'aider à minimiser les risques d'accident et de blessures, il est essentiel que vous avez toute installation, de réparation ou d'entretien effectués par un mécanicien cycliste professionnel ou votre revendeur. Ne commencez pas à des ajustements ou des services sur votre vélo, jusqu'à ce que vous avez appris de votre mécanicien ou le revendeur façon de bien les compléter. Un mauvais réglage ou d'un service peut entraîner des dommages à la bicyclette ou un accident, ce qui peut causer des blessures graves ou la mort.

Il est également important que vos besoins d'entretien individuel sera déterminé par tout, de votre style de conduite de l'emplacement géographique. Consultez votre revendeur ou mécanicien pour aider à déterminer vos besoins d'entretien. Comme tout dispositif mécanique, un vélo et ses composants sont soumis à l'usure et matériaux stress.Different et mécanismes d'usure ou de fatigue du stress à des rythmes différents et ont des cycles de vie différents. * Si un composant la vie de cycle est dépassée, le composant peut soudainement et catastrophique, causant des blessures graves ou la mort du cycliste. Rayures, des fissures et la décoloration sont des signes de stress et la fatigue causée indiquent qu'une pièce est à la fin de sa vie utile et doit être remplacé. Bien que les matériaux et de fabrication de composants de vélo peut être couverte par une garantie pour une période de temps spécifiée par le constructeur, ce n'est pas une garantie que le produit va durer la durée de la garantie. de vie du produit est souvent liée à la nature de la circonscription que vous faites et pour le traitement auquel vous envoyez le produit. Une garantie sur les composants n'est pas censé suggérer que la composante ne peut être cassé ou va durer éternellement.

Avant d'installer un composant ou d'accessoire de s'assurer qu'il est compatible avec votre bicyclette en demandant à votre concessionnaire.

保修

凱恩克里克自行車部件保證其40系列耳機一個時期的1年，從最初購買日期。任何耳機發現有缺陷的材料或工藝將被修復或更換，可酌情甘蔗河。本保證僅適用於原車主。

此保修不包括損壞或故障造成的誤用，濫用，塗改，疏忽，磨損，碰撞或衝擊，缺乏保養
或其他條件判斷凱恩克里克是不正常的，過度的或不適當的。它是強制性的，退貨授權號碼（類風濕性關節炎＃）通過聯繫凱恩克里克任何產品之前返回。

擔保債權以外的美國可以通過適當的凱恩克里克聯繫經銷商。

⚠ 警告：許多自行車保養和維修工作都需要專門的知識和工具。為了幫助減少發生意外的機會和可能的傷害，關鍵是你有任何的安裝，維修或維護工作由專業自行車技師或經銷商。不要進行任何調節或服務在您的人騎自行車，直到你學會從技師或經銷商如何正確完成它們。調整不當或服務可能會導致自行車損壞或事故發生，這可能會導致嚴重傷害或死亡。

同樣重要的是你個人的維修要求，將取決於你的駕駛風格－切從到地理位置。請諮詢您的經銷商或機械為幫助確定您的維修要求。如同任何機械設備，自行車及其部件容易磨損和stress.Different材料和機制，從緊張疲勞磨損或以不同的速度，有不同的生命週期。如果一個組件的生命週期 *超標，該組件可以突然和災難性的失敗，導致嚴重傷害或死亡的車手。划痕，裂紋和變色跡象壓力引起的疲勞，並表明，一部分是在結束其使用壽命，需要更換。雖然材料和工藝的自行車部件可以被包含在一個指定的保修期限由製造商的時間，這是沒有保證的產品將最後期限的保修。產品生命週期往往涉及到種，並騎你的待遇，您提交的產品。一個部件保修，並不是要表明，組件不能被打破，或將萬古長青。

在安裝任何組件或配件確保它適合你的自行車是通過檢查與您的經銷商。

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AAA0302

FLOAT

REAR SHOCK

TUNING GUIDE

RIDEFOX.COM

SAG SETTING

To achieve the best performance from your FOX suspension, adjust the air pressure to attain your proper sag setting. Sag is the amount your suspension compresses under your weight and riding gear. Sag range should be set to 25–30% **of total shock travel**.

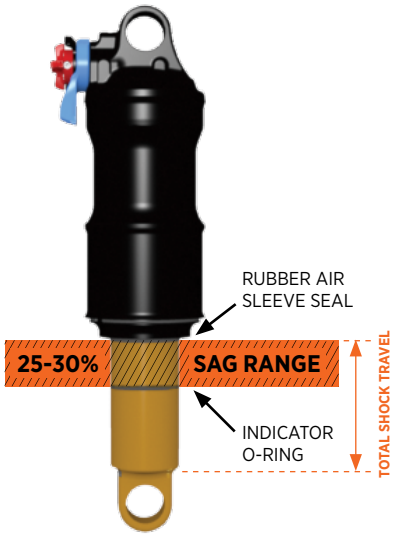
Watch the sag setup video at **ridefox.com/sagsetup**

1. Turn the 3-position lever to the OPEN mode.
2. Start by setting the shock air pressure (psi) to match your weight in pounds. With the air pump attached to the shock valve, slowly cycle your shock through 25% of its travel 10 times as you reach your desired pressure. This will equalize the positive and negative air chambers and will change the pressure on the pump gauge.
   - ⚠ Do not exceed 300 psi, the maximum FLOAT air pressure!
3. Remove the pump.
4. Sit still on the bike in your normal riding position, using a wall or a tree for support.
5. Pull the sag indicator o-ring up against the rubber air sleeve seal.
6. Carefully dismount the bike without bouncing.
7. Measure the distance between the sag indicator o-ring and the rubber air sleeve seal. Compare your measurement to the 'Suggested Sag Measurements' table.
8. Add or remove air pressure until you reach your desired sag measurement.

⚠ The recommended settings in this tuning guide are designed to be a **starting point**, in order to get you out on your first ride in as few steps as possible. Consult your bike manufacturer's instructions for setup recommendations.

As you ride and get used to your new shock, adjust your settings as needed. Detailed information and videos can be found in the online owner's manual.

Your shock has a 4 digit ID code on the shock body. Use this number on the Help page at www.ridefox.com to find out more information about your shock, including shock travel.



Suggested Sag Measurements		
Travel	**25% sag (Firm)**	**30% sag (Plush)**
38 mm (1.5 in)	10 mm (0.38 in)	11 mm (0.45 in)
44 mm (1.75 in)	11 mm (0.44 in)	13 mm (0.53 in)
51 mm (2 in)	13 mm (0.50 in)	15 mm (0.60 in)
57 mm (2.25 in)	14 mm (0.56 in)	17 mm (0.68 in)
63 mm (2.5 in)	16 mm (0.63 in)	19 mm (.75 in)

COMPRESSION ADJUSTMENTS

3-POSITION LEVER

Begin with the 3-position lever in the OPEN mode.

The **3-position** lever is useful to make on-the-fly adjustments to control shock performance under significant changes in terrain, and is intended to be adjusted throughout the ride.

Use the OPEN mode during rough descending, the MEDIUM mode for undulating terrain, and the FIRM mode for smooth climbing.

*OPEN MODE ADJUST

Set the open mode adjust to setting 1.

Open mode adjust is useful to control shock performance during rider weight shifts, G-outs, and slow inputs.

Open mode adjust provides 3 additional fine tuning adjustments for the OPEN mode.

Lift the open mode adjuster, rotate it to the 1, 2, or 3 position, and press it in to lock the position. It is recommended to make these adjustments with the 3-position lever in the Medium or Firm mode.

Setting 1 will have a more plush feel and setting 3 will have a firmer feel.

*Factory Series and Performance Elite Series shocks only

REBOUND ADJUSTMENT

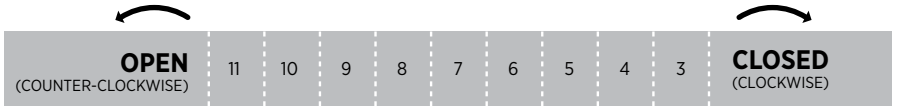
The rebound adjustment is dependent on the air pressure setting. For example, higher air pressures require slower rebound settings. Use your air pressure to find your rebound setting.

Turn your rebound knob to the closed position (full clockwise) until it stops. Then back it out (counter-clockwise) to the number of clicks shown in the table below.

REBOUND

Rebound controls the rate of speed at which the shock extends after compressing.

Air Pressure (psi)	Recommended Rebound Setting
<100	Open (counter-clockwise)
100-120	11
120-140	10
140-160	9
160-180	8
180-200	7
200-220	6
220-240	5
240-260	4
260-280	3
280-300	Closed (clockwise)



LEAST AMOUNT OF REBOUND DAMPING, SHOCK REBOUNDS **FASTEST**

MOST AMOUNT OF REBOUND DAMPING, SHOCK REBOUNDS **SLOWEST**

ADDITIONAL TUNING OPTIONS

VOLUME SPACERS

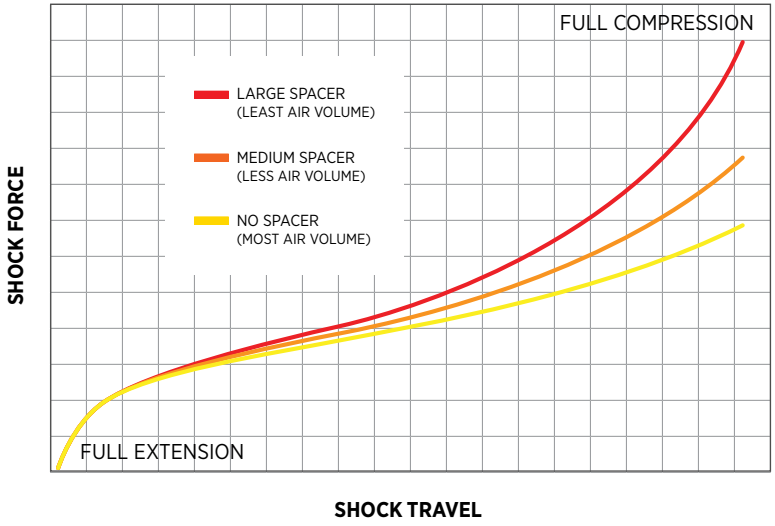
Changing volume spacers in the shock is an internal adjustment that allows you to change the amount of mid stroke and bottom out resistance.

If you have set your sag correctly and are using full travel (bottoming out) too easily, then you could install a larger spacer to increase bottom out resistance.

If you have set your sag correctly and are not using full travel, then you could install a smaller spacer to decrease bottom out resistance.

Installation procedure and tuning options are available online at:
ridefox.com/ownersmanuals

TYPICAL AIR SPRING CURVES



NOTES

SEE ADDITIONAL INFORMATION AND VIDEOS:

ridefox.com/floatdpssetup

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605-00-139 REV A

Redefine Your Limits

FOX 32

TUNING GUIDE

RIDEFOX.COM

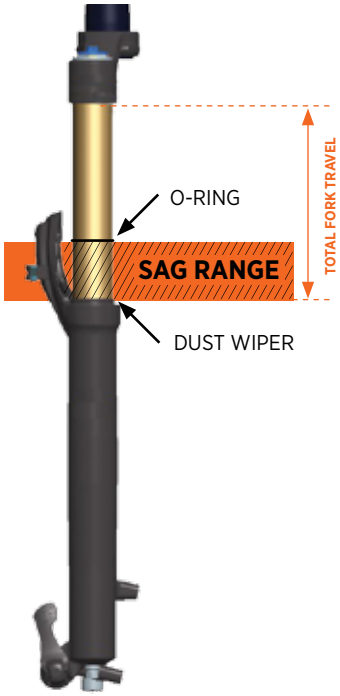
SAG SETTING

To achieve the best performance from your FOX suspension, adjust the air pressure to attain your proper sag setting. Sag is the amount your suspension compresses under your weight and riding gear. Sag range should be set to 15–20% **of total fork travel**.

Make sure to set sag with the 3-position lever in the OPEN position (see page 5).

Watch the sag setup video at **ridefox.com/sagsetup**

Suggested Sag Measurements		
Travel	**15% sag (Firm)**	**20% sag (Plush)**
110 mm (4.3 in)	17 mm (0.7 in)	22 mm (0.9 in)
120 mm (4.7 in)	18 mm (0.7 in)	24 mm (0.9 in)
130 mm (5.1 in)	20 mm (0.8 in)	26 mm (1.0 in)
140 mm (5.5 in)	21 mm (0.8 in)	28 mm (1.1 in)
150 mm (5.9 in)	23 mm (0.9 in)	30 mm (1.2 in)
160 mm (6.3 in)	24 mm (0.9 in)	32 mm (1.3 in)



Your fork has a 4 digit ID code on the back of the lower leg. Use this number on the Help page at www.ridefox.com to find out more information about your fork, including fork travel.

The recommended settings in this tuning guide are designed to be a **starting point**, in order to get you out on your first ride in as few steps as possible. Consult your bike manufacturer's instructions for setup recommendations.

As you ride and get used to your new fork, adjust your settings as needed. Detailed information and videos can be found in the online owner's manual.

Suggested Starting Points for Setting Sag			
Rider Weight (lbs)	**Rider Weight (kgs)**	**FLOAT Pressure (psi)**	**TALAS Pressure (psi)**
120-130	54-59	66	98
130-140	59-64	71	105
140-150	64-68	76	113
150-160	68-73	82	121
160-170	73-77	87	129
170-180	77-82	92	137
180-190	82-86	98	144
190-200	86-91	103	152
200-210	91-95	108	160
210-220	95-100	113	168
220-230	100-104	119	176
230-240	104-109	124	183
240-250	109-113	129	191

Do not exceed maximum air pressure:
32 FLOAT maximum air pressure is **140 psi.**
32 TALAS maximum air pressure is **200 psi.**

REBOUND ADJUSTMENT

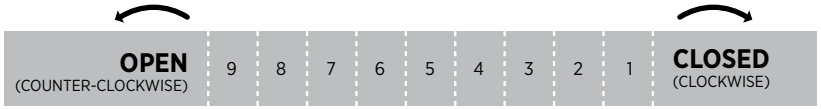
The rebound adjustment is dependent on the air pressure setting. For example, higher air pressures require slower rebound settings. Use your air pressure to find your rebound setting.

Turn your rebound knob to the closed position (full clockwise) until it stops. Then back it out (counter-clockwise) to the number of clicks shown in the table below.

REBOUND

Rebound controls the rate of speed at which the fork extends after compressing.

FLOAT Pressure (psi)	TALAS Pressure (psi)	Recommended Rebound Setting
<66	<98	9+
66-76	98-113	8
76-87	113-129	7
87-98	129-144	6
98-108	144-160	5
108-119	160-176	4
119-129	176-191	2
>129	>191	CLOSED



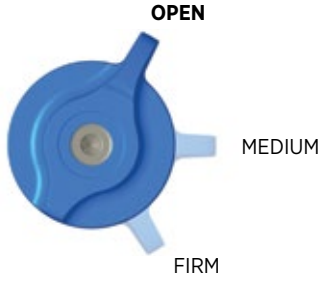
LEAST AMOUNT OF REBOUND DAMPING; FORK REBOUNDS **FASTEST**

MOST AMOUNT OF REBOUND DAMPING; FORK REBOUNDS **SLOWEST**

COMPRESSION ADJUSTMENTS

3-POSITION LEVER

Begin with the 3-position lever in the OPEN mode.

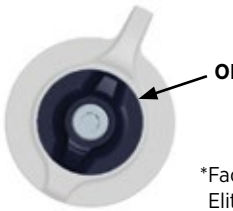


The **3-position lever** is useful to make on-the-fly adjustments to control fork performance under significant changes in terrain, and is intended to be adjusted throughout the ride.

Use the OPEN mode during rough descending, the MEDIUM mode for undulating terrain, and the FIRM mode for smooth climbing.

*OPEN MODE ADJUST

Set the OPEN mode adjust to 18 clicks out (counter-clockwise until it stops).



*Factory Series and Performance Elite Series forks only

***OPEN mode adjust** is useful to control fork performance under rider weight shifts, G-outs, and slow inputs.

OPEN mode adjust provides 22 additional fine tuning adjustments for the OPEN mode.

Setting 18 will have a more plush feel and setting 1 will have a firmer feel.

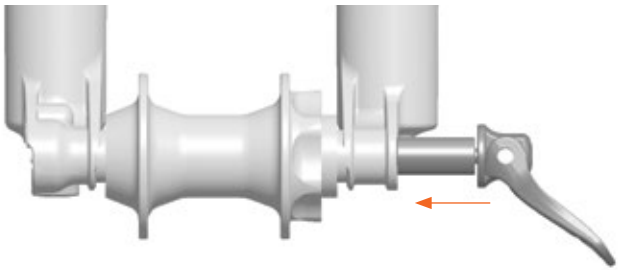
LEAST AMOUNT OF COMPRESSION DAMPING; FORK COMPRESSION **LIGHTEST**

MOST AMOUNT OF COMPRESSION DAMPING; FORK COMPRESSION **FIRMEST**

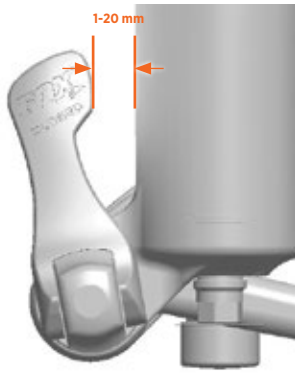
INSTALL THE FRONT WHEEL

Wheel installation is identical for both the 15x100 mm and 15x110 mm axles.

1. Install the front wheel into the fork dropouts. Slide the axle through the non-drive side dropout and hub.
2. Open the axle lever.



3. Turn the axle clockwise 5-6 complete turns into the axle nut.
4. Close the lever. The lever **must** have enough tension to leave an imprint on your hand.
5. The closed lever position **must** be between 1-20 mm in front of the fork leg.
6. If the lever does not have enough tension, or has too much tension when closed at the recommended position (1-20 mm in front of the fork), see the next page for adjustment instructions.

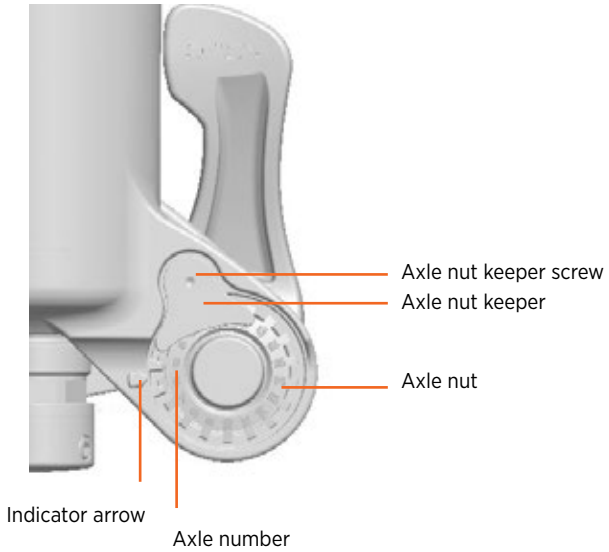


WARNING: Use hand pressure only. Never use any tool to tighten the 15QR levers onto the lower legs. Over-tightening the levers can damage the axle or fork dropouts, leading to a sudden failure with one or more of these components, resulting in SERIOUS INJURY OR DEATH.

WARNING: Failure to secure the axle properly can cause the wheel to become detached from the bicycle, resulting in SERIOUS INJURY OR DEATH.

ADJUST THE LEVER POSITION

1. Note the axle number, which is the number at the indicator arrow.
2. Use a 2.5 mm hex wrench to loosen the axle nut keeper screw approximately 4 turns, but do not completely remove the screw.
3. Move the 15QR to the open position and unthread the axle approximately 4 turns.
4. Push the 15QR axle in from the open lever side. This will push the axle nut keeper out and allow you to rotate it out of the way.
5. Continue to push on the 15QR axle and turn the axle nut clockwise to increase the lever tension, or counter-clockwise to decrease the lever tension.
6. Return the axle nut keeper into place and torque the bolt to 0.90 Nm (8 in-lb).
7. Repeat the axle installation instructions to verify proper installation and adjustment.



ADDITIONAL TUNING OPTIONS

CLIP-ON VOLUME SPACERS

Changing volume spacers in the 32 FLOAT fork is an easy internal adjustment that allows you to change the amount of mid stroke and bottom out resistance.

If you have set your sag correctly and are using full travel (bottoming out) too easily, then you could install one or more spacers to increase bottom out resistance.

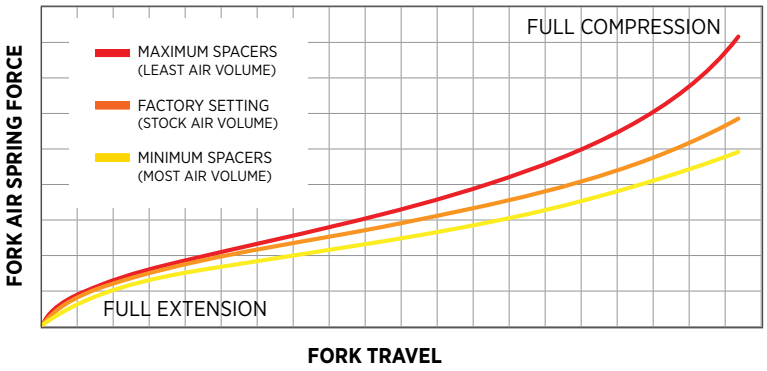
If you have set your sag correctly and are not using full travel, then you could remove one or more spacers to decrease bottom out resistance.

Installation procedure and tuning options are available online at:
ridefox.com/ownersmanuals

32 FLOAT Volume Spacer Configurations		
Travel	**Volume Spacers Factory Installed**	***Max Volume Spacers**
150 mm	1	4
140 mm	2	5
130 mm	3	6
120 mm	1	4
110 mm	2	4
100 mm	2	4
90 mm	2	4
80 mm	3	5

*Do not exceed the Max Volume Spacers number, as this can damage your fork.

TYPICAL AIR SPRING CURVES



NOTES

SEE ADDITIONAL INFORMATION AND VIDEOS:

32 FLOAT ridefox.com/32setup

NOTES

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605-00-135 REV B

Redefine Your Limits

Enduro MAX Bearings	Static Capacity (lbs)	Weight Grams	Dimensions IDxODxWidth
605 LLU MAX	156	3.6	5 x 14 x5
688 LLU MAX	210	3.9	8 x 16 x 5
698 LLU MAX	230	7.1	8 x 19 x 6
698 LLU MAX-E	248	7.5	8 x 19 x 6/7.5
698 LLU MAX-EE	248	7.5	8x19x6/1-3/10
608 LLU MAX	504	11.6	8 x 22 x 7
608 LLU MAX-E	504	12.7	8 x 22 x 7/10
628 LLU MAX	680	13.0	8 x 28 x 8
689 LLU MAX	248	7.0	9 x 17 x 5
6800 LLU MAX	260	5.1	10 x 19 x 5
63800 LLB MAX	260	7.1	10 x 19 x 7
6900 LLU MAX	485	9.5	10 x 22 x 6
6000 LLU MAX	701	19.3	10 x 26 x 8
6801 LLU MAX	286	5.8	12 x 21 x 5
6901 LLU MAX	487	10.9	12 x 24 x 6
6001 LLU MAX	825	20.8	12 x 28 x 8
6802 LLU MAX	310	6.8	15 x 24 x 5
MR 1526 LLB MAX	550	13.0	15 x 26 x 7
6902 LLU MAX	696	15.9	15 x 28 x 7
6902 LLU MAX-E	696	17.5	15 x 28 x 7/10
F6902 LLU MAX-EA	720	15.9	15 x 28 x 7/9.5
F6902 LLU MAX-EB	720	15.9	15 x 28 x 7/9.5
6002 LLB MAX	893	29.7	15 x 32 x 9
6803 LLU MAX	442	7.7	17 x 26 x 5
MR 17286 LLU MAX	650	13.9	17 x 28 x 6
6903 LLU MAX	763	17.6	17 x 30 x 7
6903 LLU MAX-E	763	19.0	17 x 30 x 7/10
6003 LLB MAX	938	39.7	17 x 35 x 10
6804 LLU MAX	613	18.5	20 x 32 x 7
MR 21531 LLU MAX	696	26.1	21.5 x 31 x 7
MR 2231 LLU MAX	696	12.9	22 x 31 x 7
6805 LLU MAX	788	21.6	25 x 37 x 7
6806 LLU MAX	940	25.7	30 x 42 x 7
6807 2RS MAX	1215	29.9	35 x 47 x 7
6808 LLU MAX	1317	31.7	40 x 52 x 7

NEW ITEMS!

-For Yeti Bikes
-For Jamis 2008-Current

-For Pivot and BMC Bikes

-For Pivot Bikes

"MAX" Type bearings have no retainer and a fill slot for balls; "MAX" stands for Maximum number of Balls

In general, 35% more load capacity than retainer type (standard) bearings

"MAX" bearings do not spin as smoothly as the retainer bearings and generally should be used for suspension pivots

6809 LLU MAX	1444	31.7	45 x 58 x7

Enduro MAX Standard Inch Sizes

KP 5A	395	9.7	5/16x13/16x9/32"	-For Marin Bikes
KP 6A	492	9.7	3/8 x 7/8 x 5/16"	
R 6 LLU MAX	486	10.9	3/8 x 7/8 x 9/32"	-For Santa Cruz, Trek Bikes
R 8 LLU MAX	813	21.6	1/2x1 1/8x5/16"	
6901 SM MAX (38802)	1050	14.6	1/2" x 24 x 7/10	-For Santa Cruz, Trek Bikes
6000 SM MAX	950	20.1	1/2" x 26 x 7/10	
B 539 LLB MAX	750	14.6	3/4x1 3/16x9/32"	-For Profile Bottom Bracket, BMX
B 541/F MAX	925	19.9	1 1/16x1.5x9/32"	-For Foes
B 542 2RS MAX	1115	24.8	1 5/16x1 3/4x9/32"	
B 543 2RS MAX	1465	28.8	1 9/16x2x9/32"	-For Cannondale Headset
B 546 2RS MAX	1750	52.9	2 5/16x2 7/8x9/32"	

Enduro Angular Contact MAX Type

7900 2RS MAX	485	9.7	10 x 22 x 6
7900 1ZS MAX	485	9.7	10 x 22 x 6
7901 2RS MAX	487	12.1	12 x 24 x 6
7001 2RS MAX	825	20.3	12 x 28 x 8
7001 1ZS MAX	825	20.8	12 x 28 x 8
MRA 1526 LLB MAX	605	12.6	15 x 26 x 7
7902 2RS MAX	696	15.1	15 x 28 x 7
7902 1ZS MAX	696	15.1	15 x 28 x 7
7903 2RS MAX	763	17.6	17 x 30 x 7

"LLU" is a double-lip type seal making medium contact, and also rides in a groove making a labrinth seal

1ZS is greasable from one side for Santa Cruz, Intense

Enduro Double Row MAX Type

398 LLU MAX-E	345	7.1	8 x 19 x10/11
398 LLU MAX-EE	345	7.5	8 x 19 x10/13
DR 1017 2RS MAX*	472	5.45	10 x 17 x 6/7
6901 SM MAX (38802)	1050	14.6	12.7 x 24 x 7/10
3802 LLU MAX	940	10.5	15 x 24 x 7

Double Row are Angular Contact and these are also MAX type for the highest static capacity with given dimensions

*For Evil Bikes

Black Oxide MAX type Below:

Black Oxide (BO) Bearings are Corrosion Resistant and 90% filled with Marine High Pressure Grease:

Enduro MAX BO Bearings	Static Capacity (lbs)	Weight Grams	Dimensions IDxODxWidth
688 LLU MAX BO	210	3.9	8 x 16 x 5
698 LLU MAX BO	230	7.1	8 x 19 x 6
608 LLU MAX BO	504	11.6	8 x 22 x 7
6800 LLU MAX BO	260	5.1	10 x 19 x 5
6801 LLU MAX BO	286	5.8	12 x 21 x 5
6900 LLU MAX BO	485	9.5	10 x 22 x 6
6901 LLU MAX BO	487	10.9	12 x 24 x 6
6802 LLU MAX BO	310	6.8	15 x 24 x 5
6902 LLU MAX BO	696	15.9	15 x 28 x 7
6803 LLU MAX BO	442	7.7	17 x 26 x 5
6903 LLU MAX BO	763	17.6	17 x 30 x 7
6806 LLU MAX BO	940	25.7	30 x 42 x 7

With the corrosion resistance close to Stainless Steel, but much better load capacity, we think these are the best pivot bearings you can install. CRC Marine Grease fill too.